

# *Crash rates and costs*



## Crash reporting rates

The ratio of 'reported serious injuries' can be assessed by comparing seriously injured casualty numbers from Police crash reports to hospital admissions, given that a serious injury is generally one requiring hospital attention.

Figure 1.1 below indicates the serious injury reporting rate for each region.

**Figure 1.1 Reporting rate serious injuries to hospital admissions**

| Region             | 1997<br>1999 | 2001<br>2002 | 2002<br>2003 | 2003<br>2004 | 2004<br>2005 |
|--------------------|--------------|--------------|--------------|--------------|--------------|
| Northland          | 41%          | 52%          | 54%          | 59%          | 68%          |
| Auckland           | 63%          | 63%          | 67%          | 67%          | 67%          |
| Waikato            | 58%          | 65%          | 69%          | 68%          | 75%          |
| Bay of Plenty      | 48%          | 54%          | 63%          | 60%          | 63%          |
| Gisborne           | 53%          | 56%          | 56%          | 60%          | 55%          |
| Hawkes Bay         | 57%          | 65%          | 72%          | 73%          | 79%          |
| Taranaki           | 69%          | 70%          | 75%          | 70%          | 73%          |
| Manawatu-Wanganui  | 64%          | 67%          | 63%          | 62%          | 69%          |
| Wellington         | 62%          | 56%          | 65%          | 63%          | 72%          |
| Nelson-Marlborough | 74%          | 67%          | 72%          | 68%          | 71%          |
| West Coast         | 58%          | 64%          | 71%          | 62%          | 70%          |
| Canterbury         | 68%          | 69%          | 69%          | 68%          | 69%          |
| Otago              | 62%          | 79%          | 79%          | 77%          | 83%          |
| Southland          | 55%          | 68%          | 68%          | 61%          | 73%          |
| <b>New Zealand</b> | 60%          | 64%          | 67%          | 67%          | <b>70%</b>   |

These variations in reporting rates need to be considered when viewing the trends in crashes and casualties shown in this report.

**Figure 1.2 Crashes per 100 million vehicle kilometres travelled**

|                   | Local roads |       | State highways |       |
|-------------------|-------------|-------|----------------|-------|
|                   | Urban       | Rural | Urban          | Rural |
| Invercargill City | 73          | 65    | 61             | 30    |
| Group B           | 39          | 30    | 26             | 16    |
| All NZ            | 36          | 26    | 32             | 16    |

**Figure 1.3 Casualties per 100 million vehicle kilometres travelled**

|                   | Local roads |       | State highways |       |
|-------------------|-------------|-------|----------------|-------|
|                   | Urban       | Rural | Urban          | Rural |
| Invercargill City | 107         | 117   | 83             | 53    |
| Group B           | 48          | 44    | 33             | 24    |
| All NZ            | 46          | 38    | 43             | 25    |

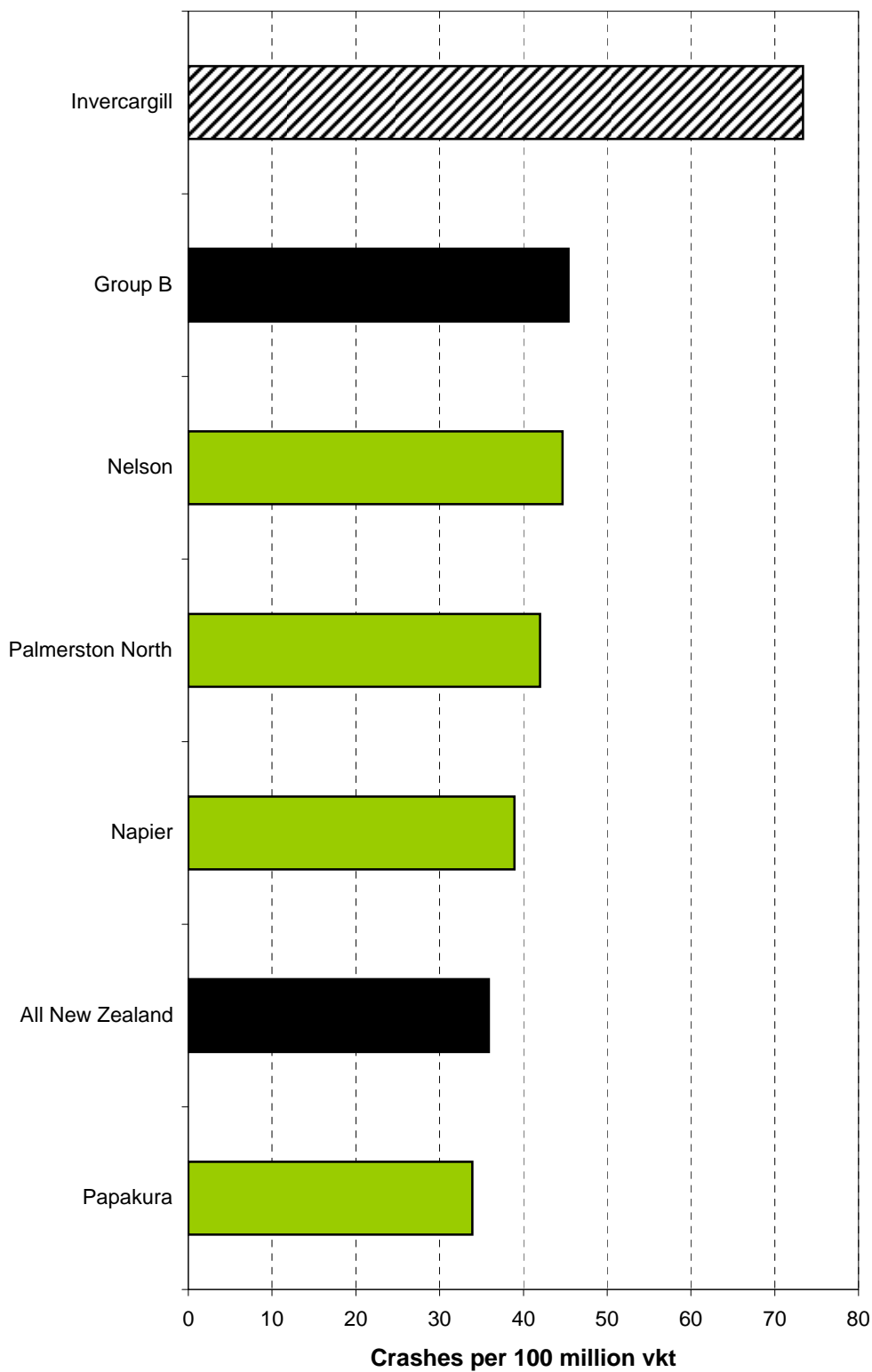
Figure 1.4 Peer group crash and casualty rates

**Group B**

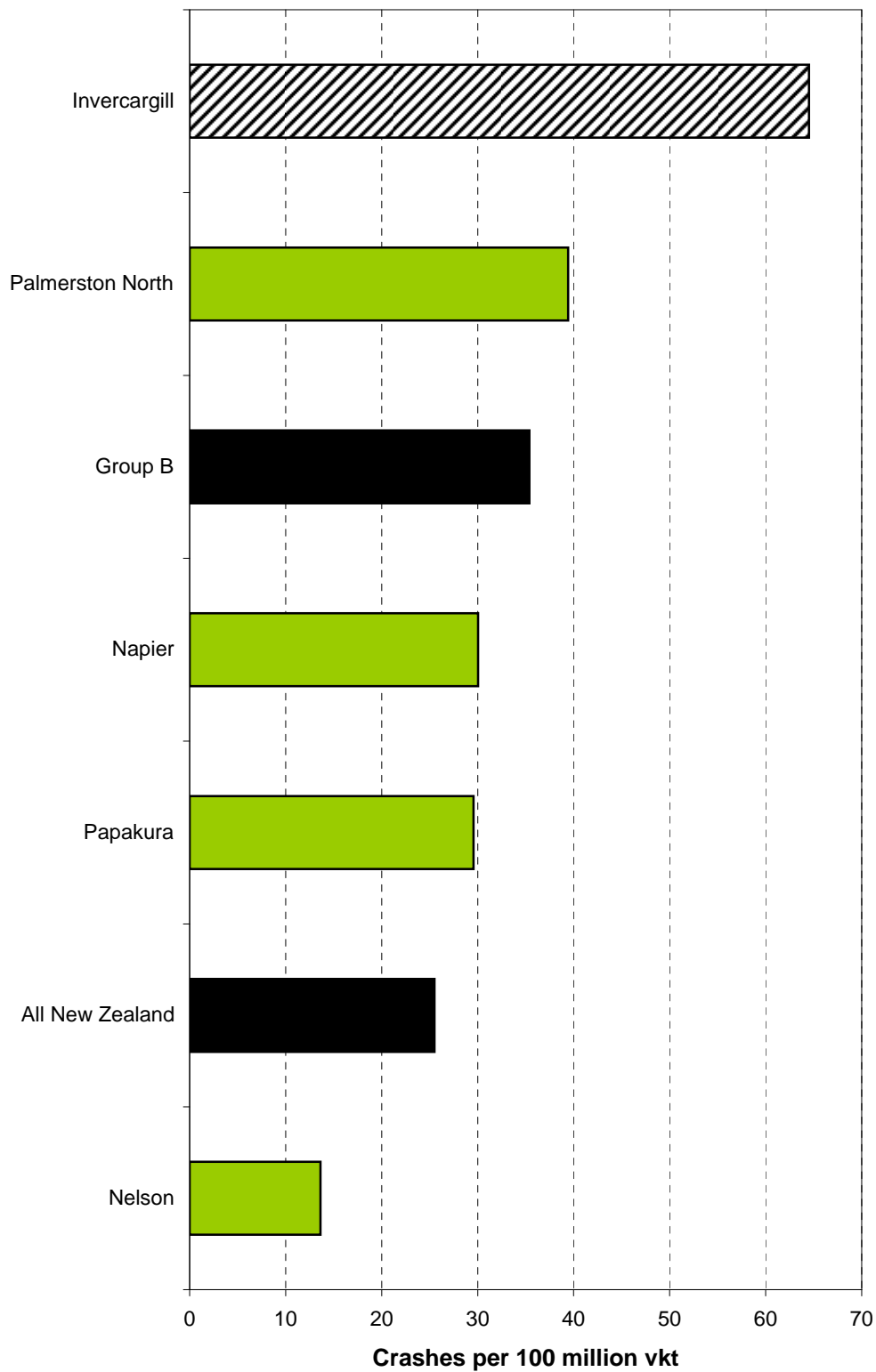
| City or District | Crashes per                           |  |       |                |       | Casualties per                        |  |       |                |       | 2007 Population | % of rural crashes |
|------------------|---------------------------------------|--|-------|----------------|-------|---------------------------------------|--|-------|----------------|-------|-----------------|--------------------|
|                  | 10,000 Population<br>(5 year average) | 100 million vehicle kilometres travelled |       |                |       | 10,000 Population<br>(5 year average) | 100 million vehicle kilometres travelled |       |                |       |                 |                    |
|                  |                                       | Local roads                              |       | State highways |       |                                       | Local roads                              |       | State highways |       |                 |                    |
|                  |                                       | Urban                                    | Rural | Urban          | Rural |                                       | Urban                                    | Rural | Urban          | Rural |                 |                    |
| Invercargill     | 41                                    | 73                                       | 65    | 61             | 30    | 61                                    | 107                                      | 117   | 83             | 53    | 51600           | 17                 |
| Napier           | 24                                    | 39                                       | 30    | 37             | 17    | 32                                    | 48                                       | 41    | 51             | 28    | 56900           | 18                 |
| Nelson           | 24                                    | 45                                       | 14    | 26             | 18    | 29                                    | 51                                       | 20    | 31             | 25    | 44400           | 20                 |
| Palmerston North | 21                                    | 42                                       | 39    | 37             | 23    | 27                                    | 49                                       | 62    | 44             | 34    | 78800           | 19                 |
| Papakura         | 26                                    | 34                                       | 30    | 584            | 12    | 37                                    | 46                                       | 44    | 712            | 18    | 47700           | 43                 |
|                  |                                       |  |       |                |       |                                       |  |       |                |       |                 |                    |
| Group B          | 27                                    | 45                                       | 35    | 46             | 17    | 36                                    | 58                                       | 56    | 61             | 26    | 279400          | 22                 |
| All New Zealand  | 26                                    | 36                                       | 26    | 32             | 16    | 36                                    | 46                                       | 38    | 43             | 25    | 4227700         | 41                 |

Group B : Major urban areas with some rural areas on the outskirts. (Population 40000-97500 and/or rural crashes less than 35 percent)  
Crashes and casualties per 100 million VKT are based on five years of reported injury on-road crash data (2003-2007) and December (2005) VKT.  
Crashes and casualties per 10,000 population are based on five year average crash data (2003-2007) and Statistics NZ 2007 population estimates.

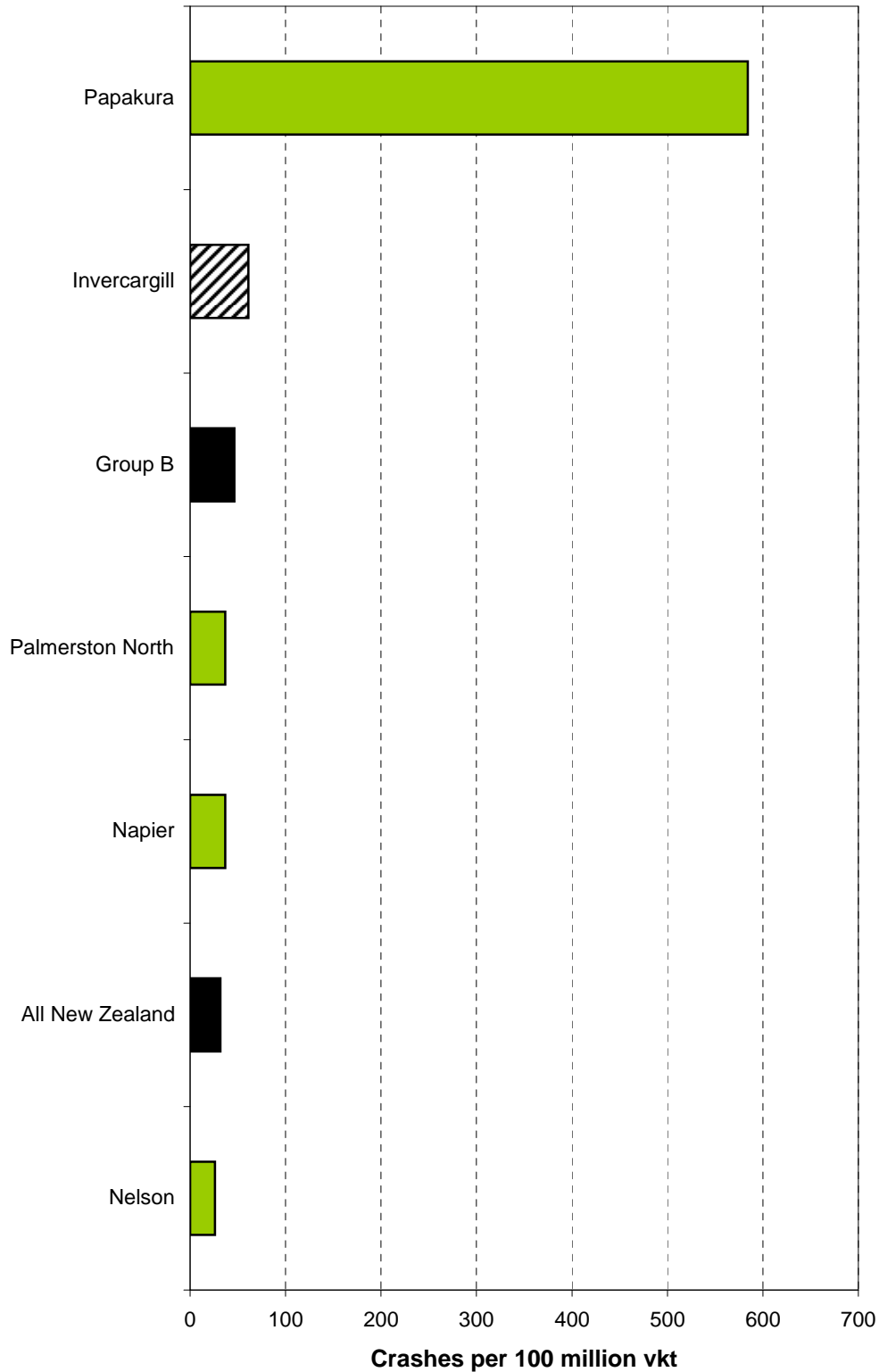
**Figure 1.5 Crashes per 100 million vehicle-kilometres travelled - urban local roads**



**Figure 1.6 Crashes per 100 million vehicle-kilometres travelled - rural local roads**

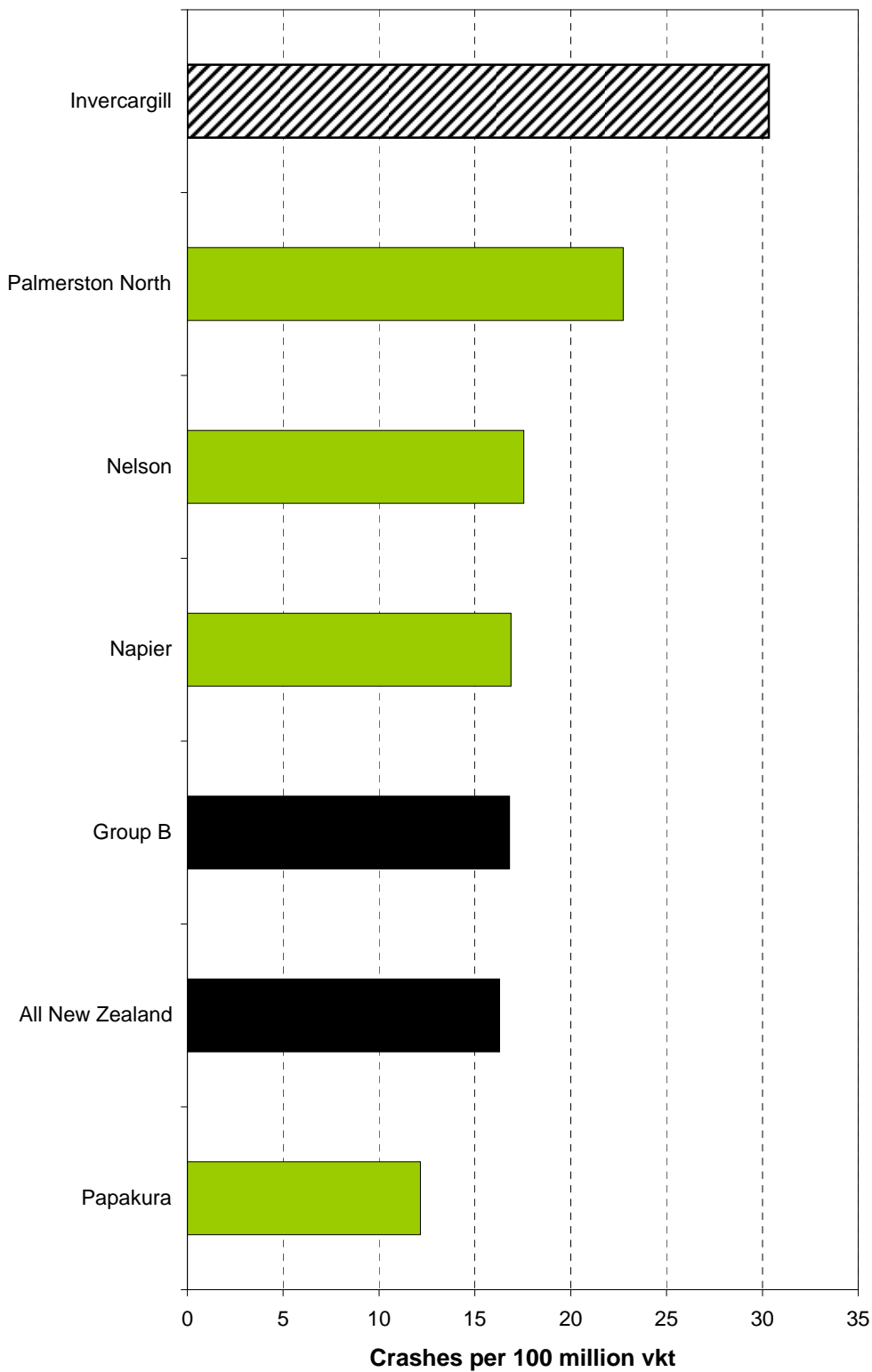


**Figure 1.7 Crashes per 100 million vehicle kilometres travelled  
- urban state highways**

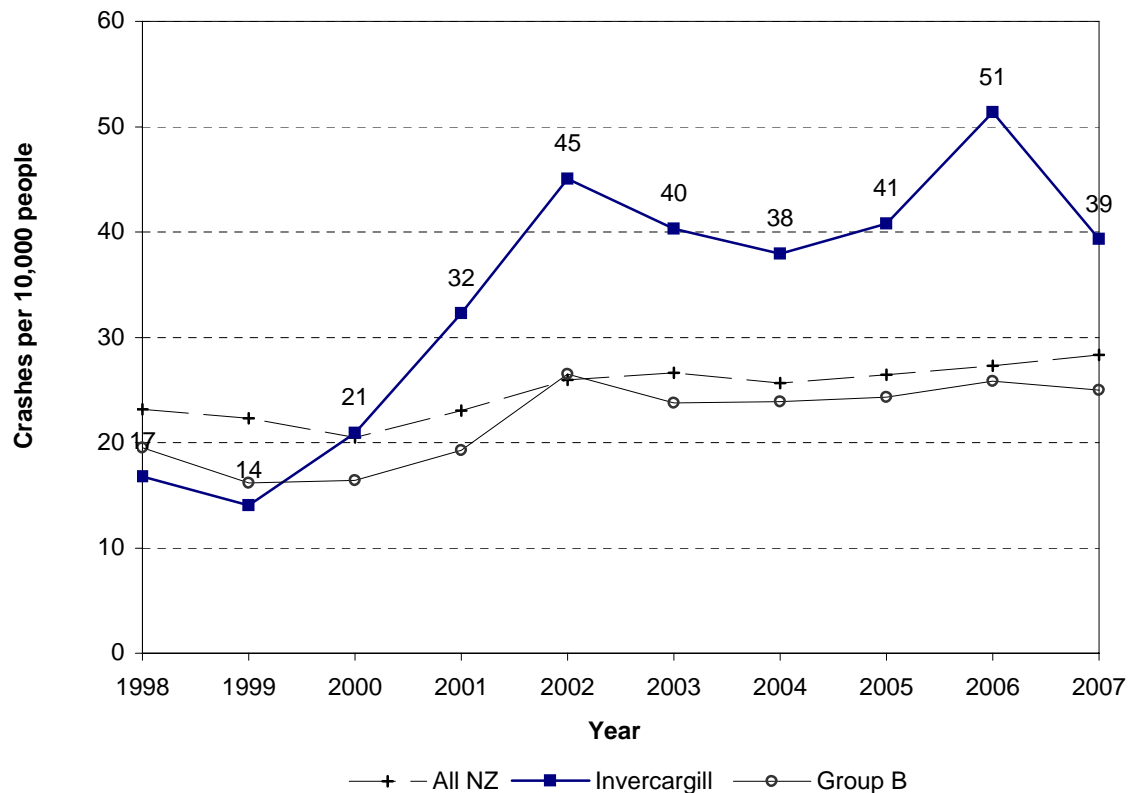




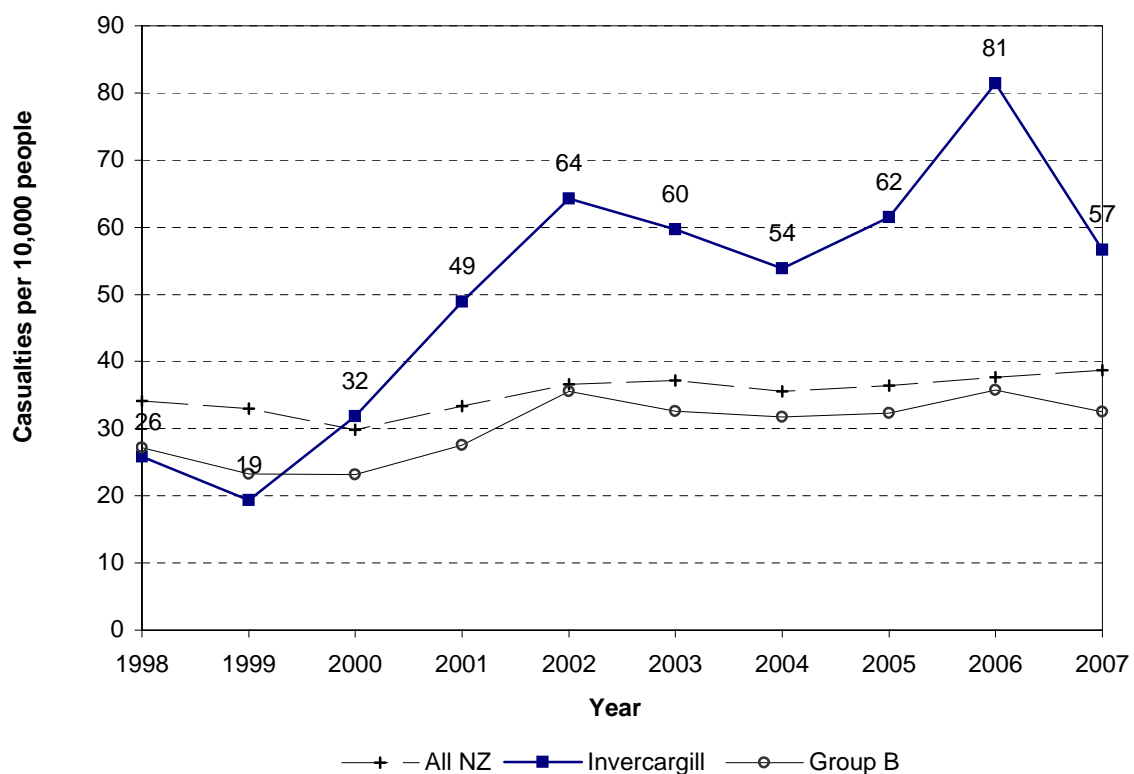
**Figure 1.8 Crashes per 100 million vehicle-kilometres travelled  
- rural state highways**



**Figure 1.9 Crashes per 10,000 people  
Invercargill City**



**Figure 1.10 Casualties per 10,000 people  
Invercargill City**



**Figure 1.11 Social cost of crashes in Invercargill City in 2007**

|                |       | Invercargill City | New Zealand       |
|----------------|-------|-------------------|-------------------|
| Local roads    | urban | \$27.98           | \$1,609.18        |
|                | rural | \$8.29            | \$891.74          |
| State highways | urban | \$9.09            | \$323.26          |
|                | rural | \$10.31           | \$1,533.31        |
| Total          |       | <b>\$55.67</b>    | <b>\$4,357.48</b> |

Note: Crash costs are in \$ millions

The social costs of a road crash and the associated injuries include a number of different elements:

- Loss of life and life quality
- Loss of output due to temporary incapacitation
- Medical costs
- Legal costs
- Property damage costs

The average value of a loss of life due to a road crash is estimated by the amount of money the New Zealand population would be willing to pay for a safety improvement that would result in the expected avoidance of one premature death. This is the willingness to pay based value of statistical life or VOSL. The VOSL was established at \$2 million in 1991. This has been indexed to the average hourly earnings (ordinary time) to express the value in current dollars. The updated VOSL is \$3.19 million (in June 2007 dollars). Based on several international and New Zealand studies on VOSL, the average loss of life quality for permanent impairments due to a serious and a minor injury were estimated to be 10% and 0.4% of the VOSL respectively.

Crash rates can vary due to reporting rates. These are adjusted on a regional basis in this report by comparing with hospitalisation rates.

The other social cost components are estimated based on a number of studies conducted during the early to mid-1990s and are updated for price changes by indexing to an appropriate price index.

For a detail discussion on this, please refer to 'The social cost of road crashes and injuries: June 2007 update', available at the Ministry of Transport's website:  
[http://www.transport.govt.nz/socialcost/Social-cost-June-2007-update\[1\].pdf](http://www.transport.govt.nz/socialcost/Social-cost-June-2007-update[1].pdf)

The average social cost per reported crash (in June 2007 dollars) are estimated at:

|                     |             |
|---------------------|-------------|
| Rural fatal crash   | \$4,016,000 |
| Rural serious crash | \$735,000   |
| Rural minor crash   | \$88,000    |
| Urban fatal crash   | \$3,539,000 |
| Urban serious crash | \$626,000   |
| Urban minor crash   | \$79,000    |

These values include an allowance for non-reported injury crashes, and the totals in Fig. 1.11 also include an allowance for non-injury crashes.



# *Crash counts*



**Figure 2.1: Crash numbers and severity 2003 to 2007 - whole City**

|                      | 2003 | 2004 | 2005 | 2006 | 2007 | Total | %    | Group B |
|----------------------|------|------|------|------|------|-------|------|---------|
| Fatal crashes        | 2    | 2    | 0    | 2    | 4    | 10    | 1%   | 2%      |
| Serious crashes      | 51   | 37   | 47   | 65   | 37   | 237   | 22%  | 19%     |
| Minor crashes        | 157  | 159  | 165  | 198  | 162  | 841   | 77%  | 79%     |
| Total injury crashes | 210  | 198  | 212  | 265  | 203  | 1088  | 100% | 100%    |
| Non-injury crashes   | 322  | 282  | 334  | 279  | 339  | 1556  |      |         |

**Figure 2.2: Crash numbers and severity 2003 to 2007 - urban roads**

|                      | 2003 | 2004 | 2005 | 2006 | 2007 | Total | %    | Group B |
|----------------------|------|------|------|------|------|-------|------|---------|
| Fatal crashes        | 1    | 2    | 0    | 0    | 1    | 4     | 0%   | 1%      |
| Serious crashes      | 38   | 31   | 36   | 52   | 28   | 185   | 20%  | 18%     |
| Minor crashes        | 136  | 145  | 130  | 173  | 139  | 723   | 79%  | 81%     |
| Total injury crashes | 175  | 178  | 166  | 225  | 168  | 912   | 100% | 100%    |
| Non-injury crashes   | 289  | 259  | 295  | 256  | 314  | 1413  |      |         |

**Figure 2.3: Crash numbers and severity 2003 to 2007 - rural roads**

|                      | 2003 | 2004 | 2005 | 2006 | 2007 | Total | %    | Group B |
|----------------------|------|------|------|------|------|-------|------|---------|
| Fatal crashes        | 1    | 0    | 0    | 2    | 3    | 6     | 3%   | 6%      |
| Serious crashes      | 13   | 6    | 11   | 13   | 9    | 52    | 30%  | 22%     |
| Minor crashes        | 21   | 14   | 35   | 25   | 23   | 118   | 67%  | 71%     |
| Total injury crashes | 35   | 20   | 46   | 40   | 35   | 176   | 100% | 100%    |
| Non-injury crashes   | 33   | 23   | 39   | 23   | 25   | 143   |      |         |

**Figure 2.4: Casualty numbers and severity 2003 to 2007 - whole City**

|                    | 2003 | 2004 | 2005 | 2006 | 2007 | Total | %    | Group B |
|--------------------|------|------|------|------|------|-------|------|---------|
| Fatal casualties   | 2    | 2    | 0    | 2    | 5    | 11    | 1%   | 2%      |
| Serious casualties | 61   | 41   | 56   | 78   | 45   | 281   | 17%  | 17%     |
| Minor casualties   | 248  | 238  | 264  | 340  | 242  | 1332  | 82%  | 81%     |
| Total casualties   | 311  | 281  | 320  | 420  | 292  | 1624  | 100% | 100%    |

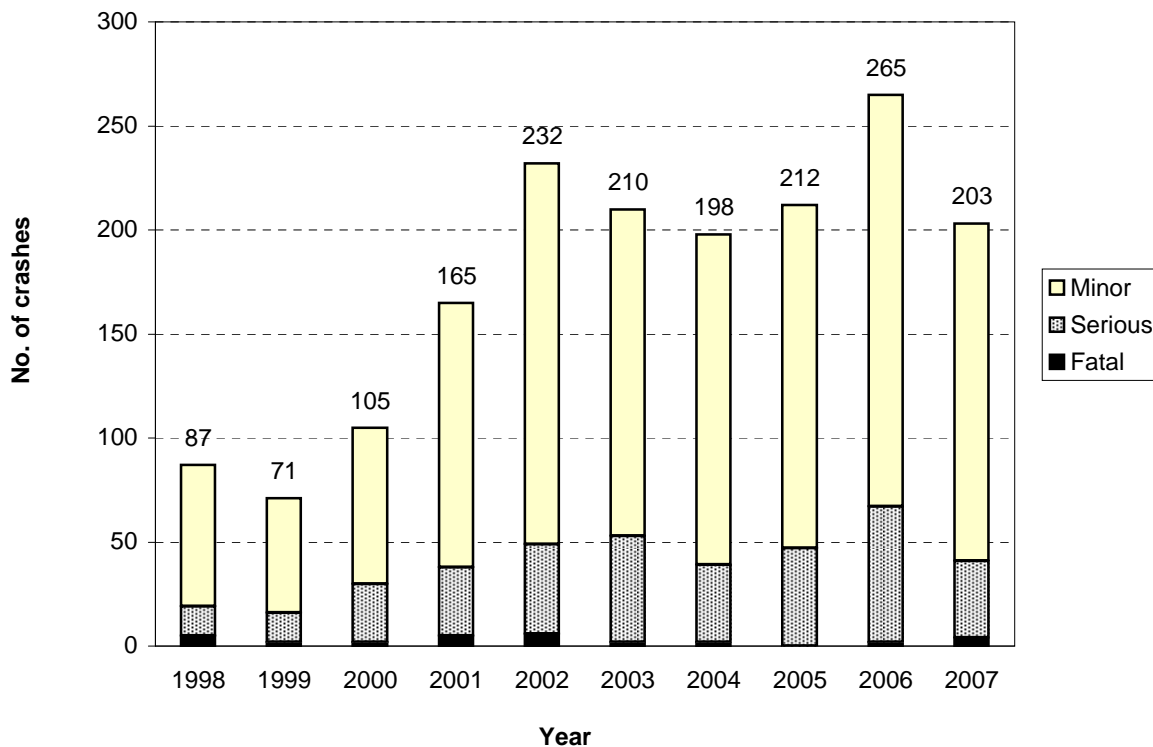
**Figure 2.5: Casualty numbers and severity 2003 to 2007 - urban roads**

|                    | 2003 | 2004 | 2005 | 2006 | 2007 | Total | %    | Group B |
|--------------------|------|------|------|------|------|-------|------|---------|
| Fatal casualties   | 1    | 2    | 0    | 0    | 1    | 4     | 0%   | 1%      |
| Serious casualties | 43   | 33   | 40   | 62   | 32   | 210   | 16%  | 16%     |
| Minor casualties   | 204  | 217  | 201  | 278  | 196  | 1096  | 84%  | 84%     |
| Total casualties   | 248  | 252  | 241  | 340  | 229  | 1310  | 100% | 100%    |

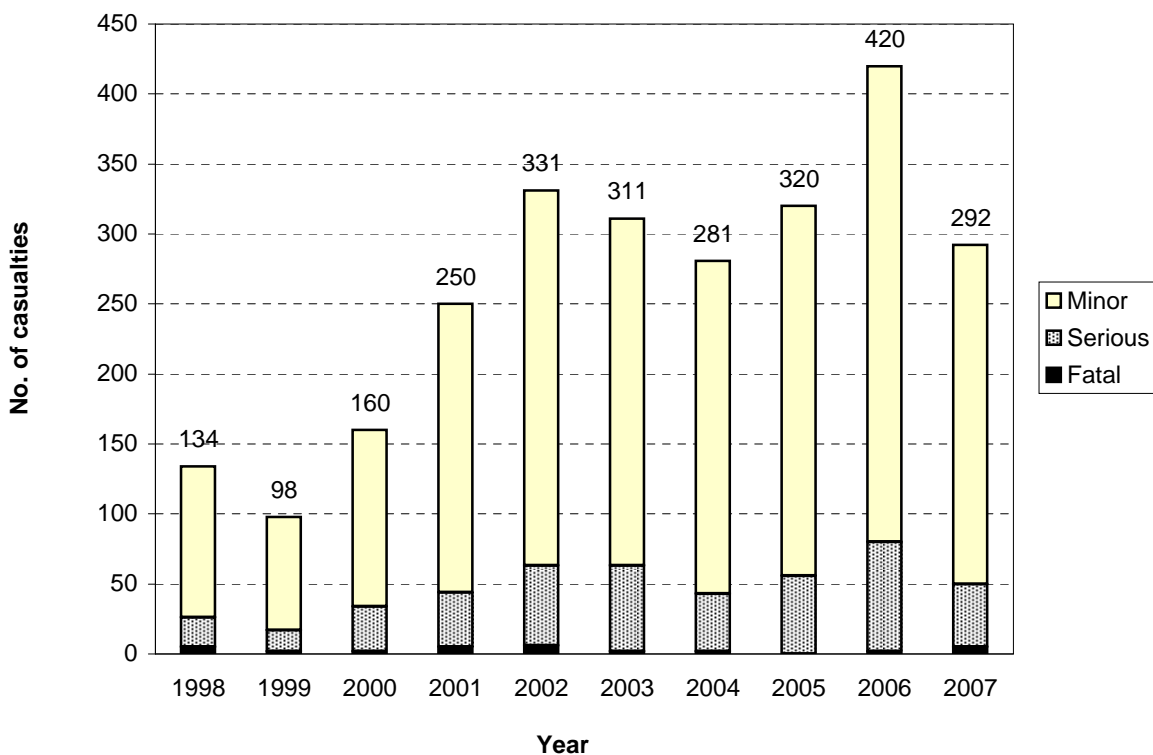
**Figure 2.6: Casualty numbers and severity 2003 to 2007 - rural roads**

|                    | 2003 | 2004 | 2005 | 2006 | 2007 | Total | %    | Group B |
|--------------------|------|------|------|------|------|-------|------|---------|
| Fatal casualties   | 1    | 0    | 0    | 2    | 4    | 7     | 2%   | 4%      |
| Serious casualties | 18   | 8    | 16   | 16   | 13   | 71    | 23%  | 21%     |
| Minor casualties   | 44   | 21   | 63   | 62   | 46   | 236   | 75%  | 75%     |
| Total casualties   | 63   | 29   | 79   | 80   | 63   | 314   | 100% | 100%    |

**Figure 2.7 Number of injury crashes  
Invercargill City all roads (urban & rural)**

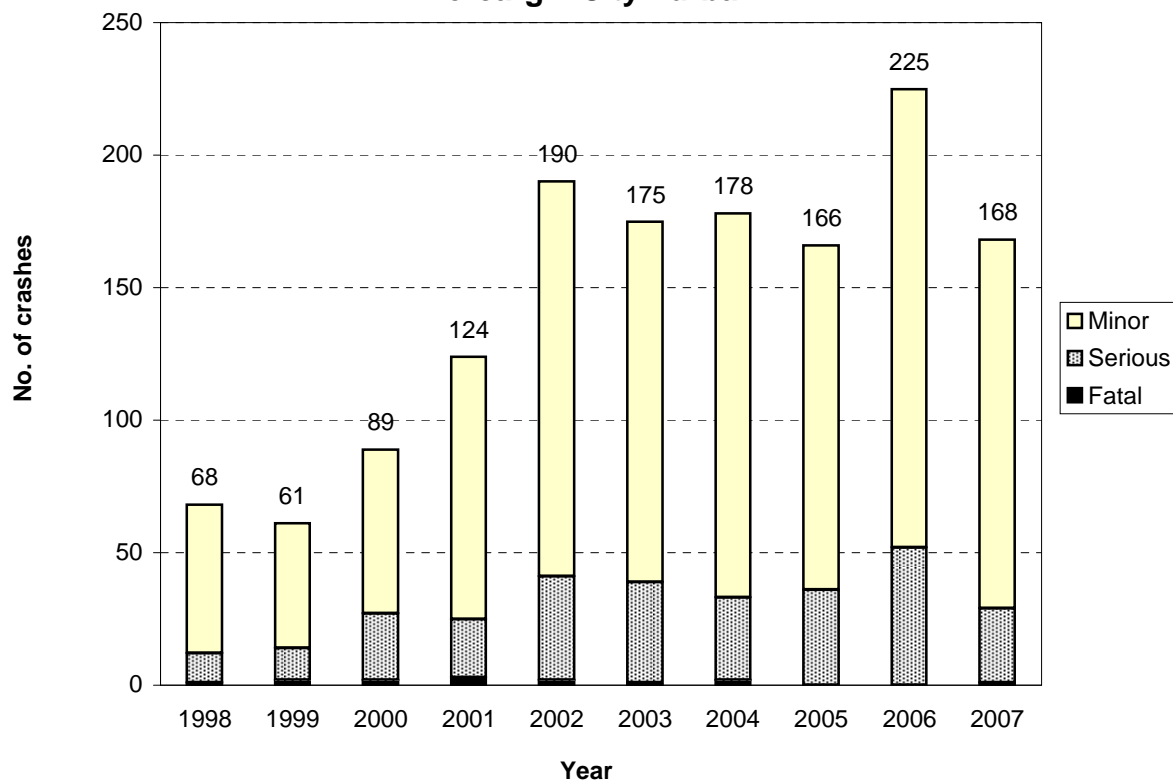


**Figure 2.8 Number of casualties  
Invercargill City all roads (urban & rural)**

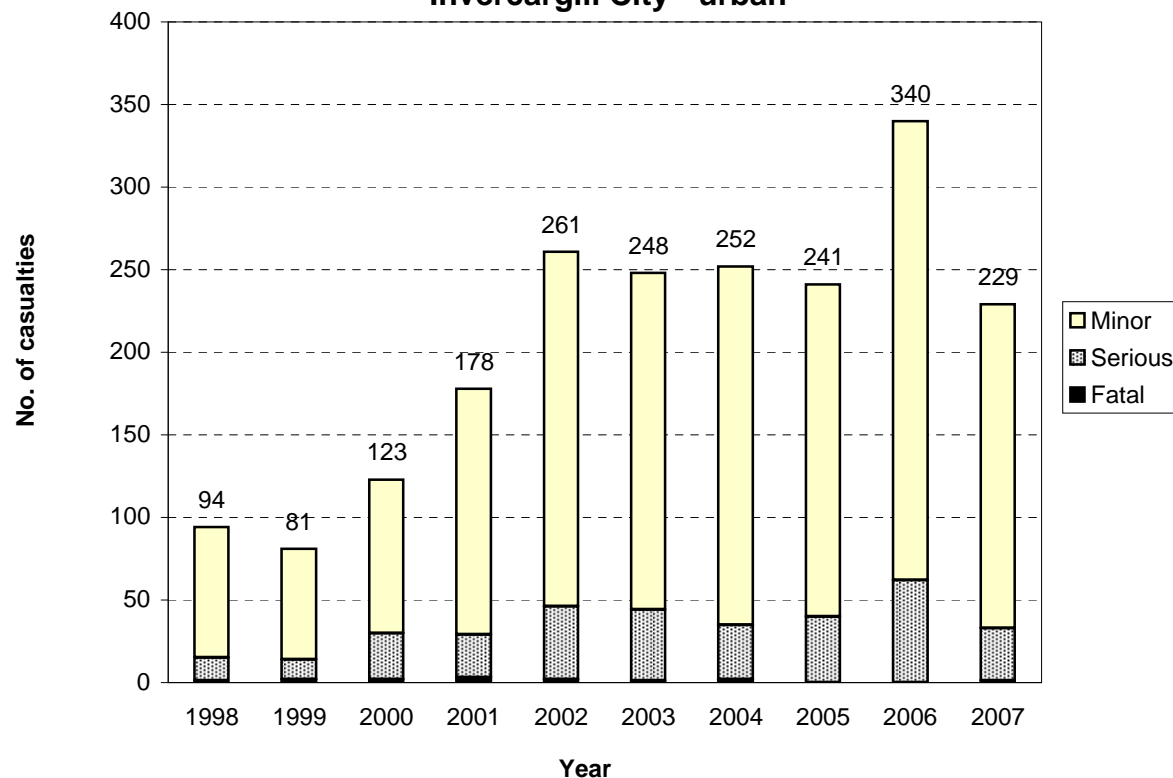




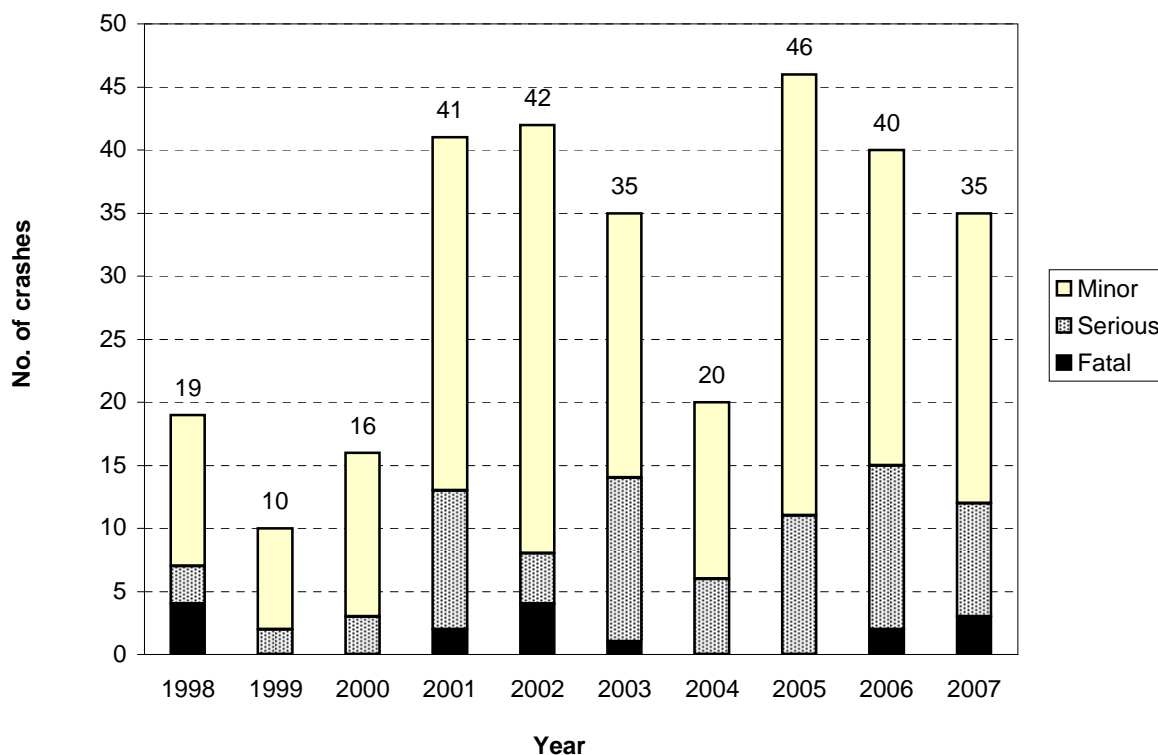
**Figure 2.9 Number of injury crashes  
Invercargill City - urban**



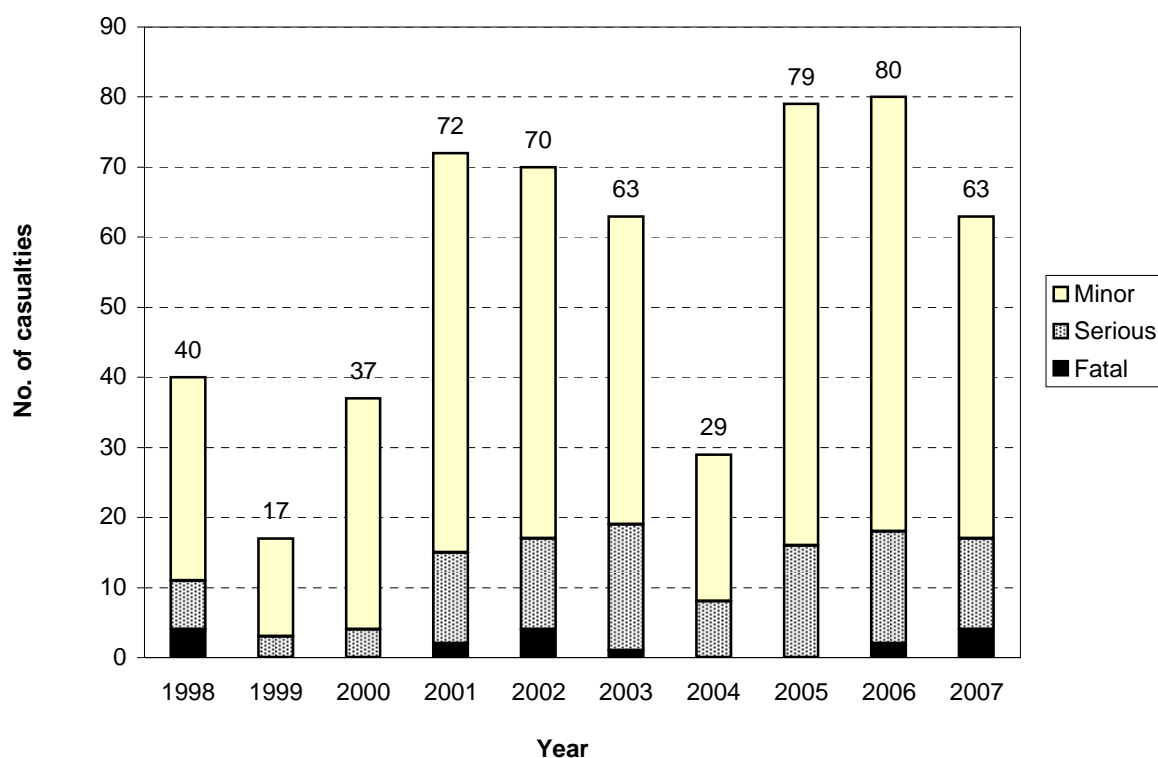
**Figure 2.10 Number of casualties  
Invercargill City - urban**



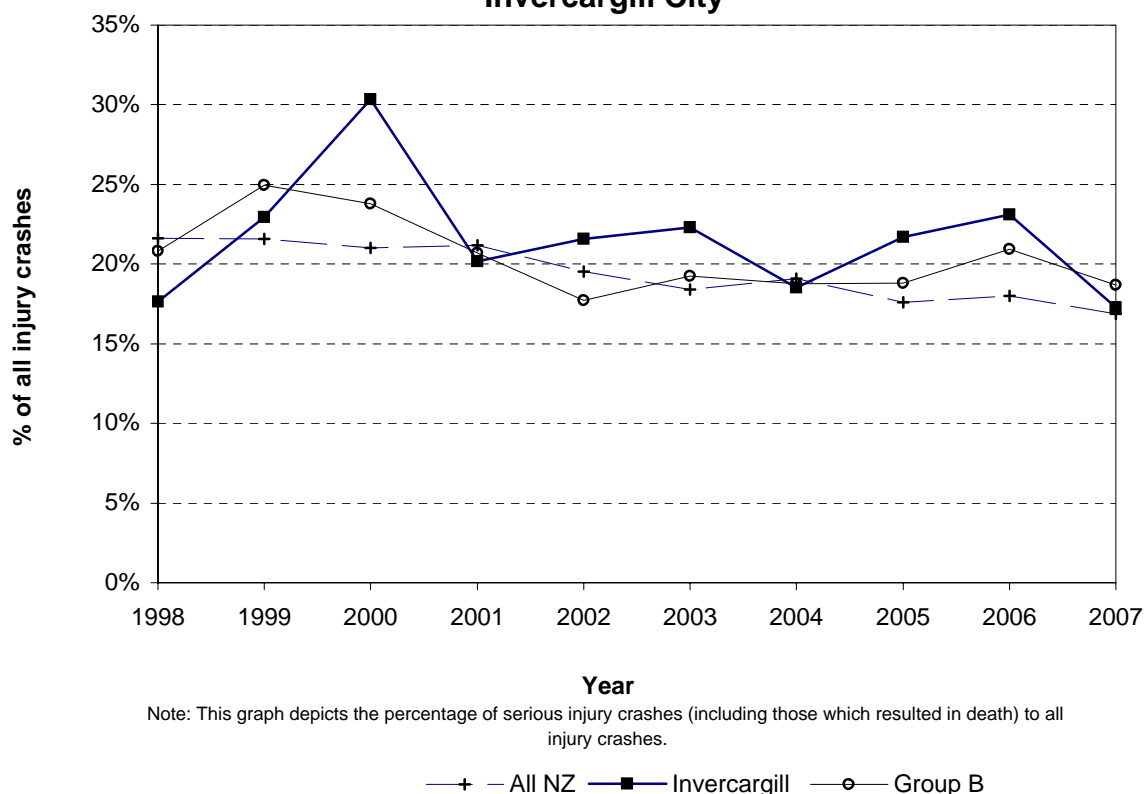
**Figure 2.11 Number of injury crashes  
Invercargill City - rural**



**Figure 2.12 Number of casualties  
Invercargill City - rural**



**Figure 2.13 Severity ratio - urban  
Invercargill City**



**Figure 2.14 Severity ratio - rural  
Invercargill City**

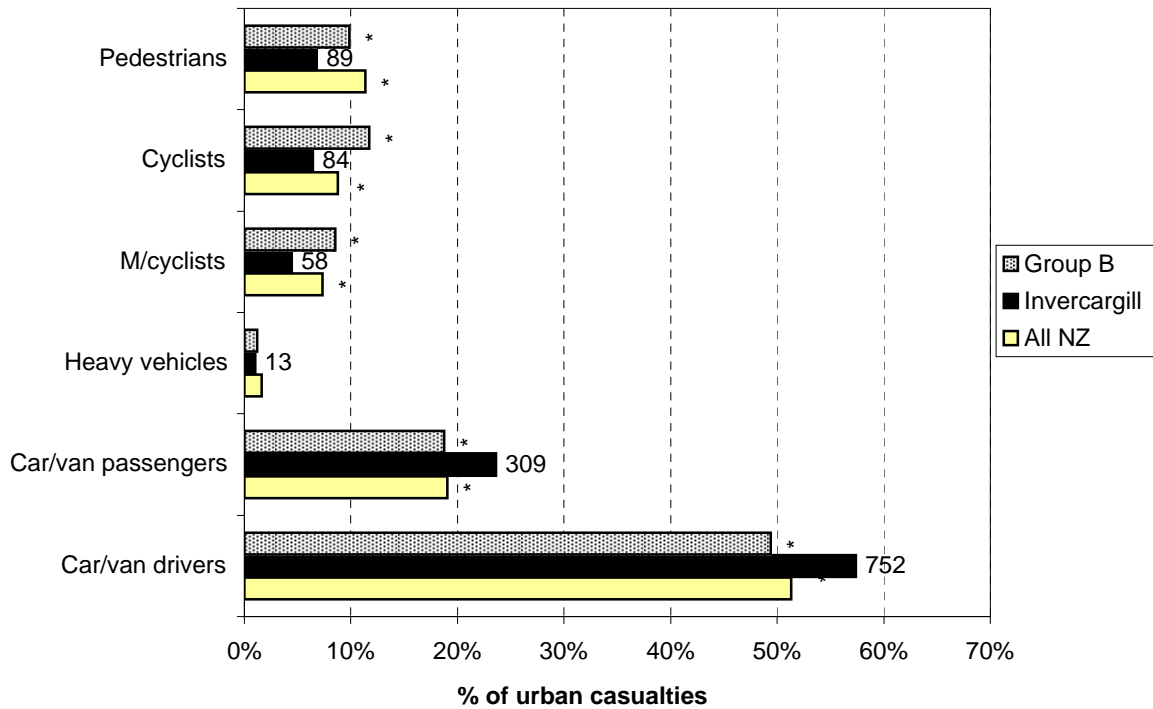




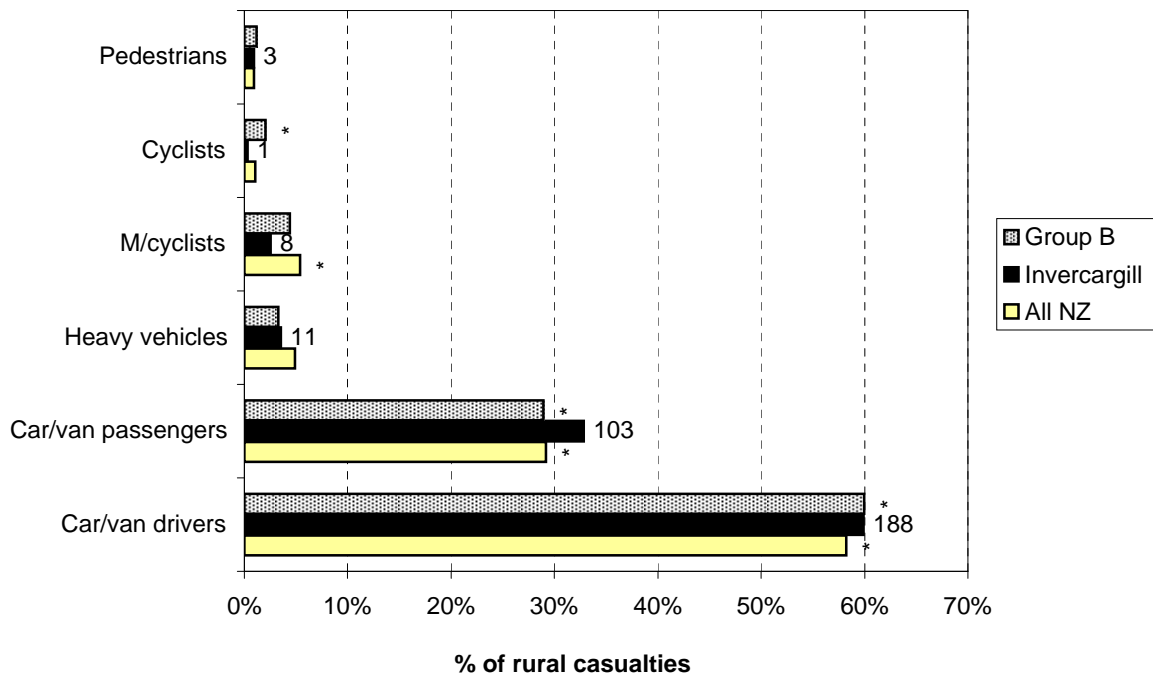
# *Road user statistics*



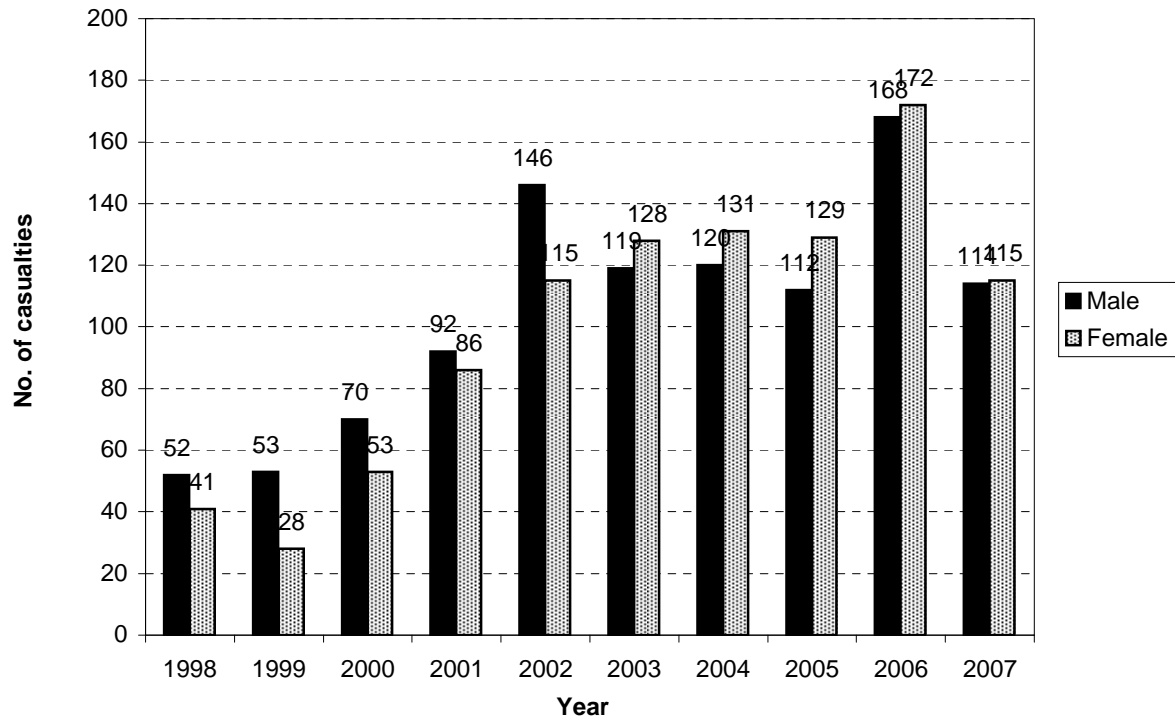
**Figure 3.1 Road user casualties - urban  
Invercargill City (2003-2007)**



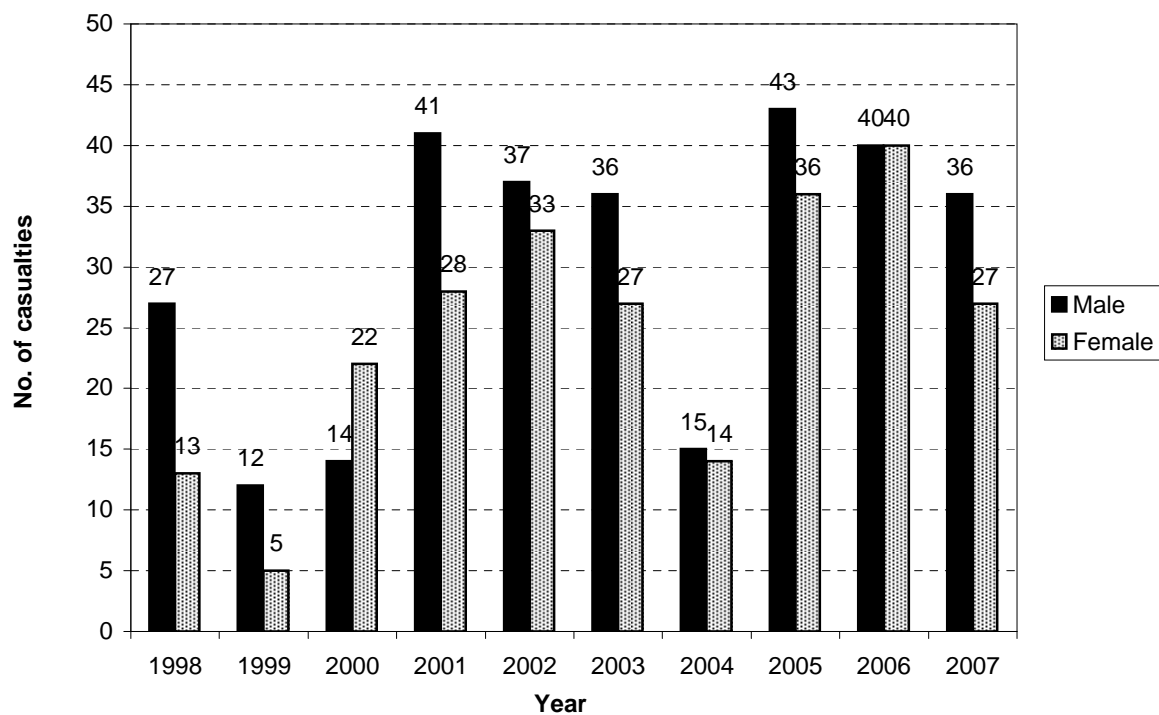
**Figure 3.2 Road user casualties - rural  
Invercargill City (2003-2007)**



**Figure 3.3 Male/female casualties - urban  
Invercargill City**



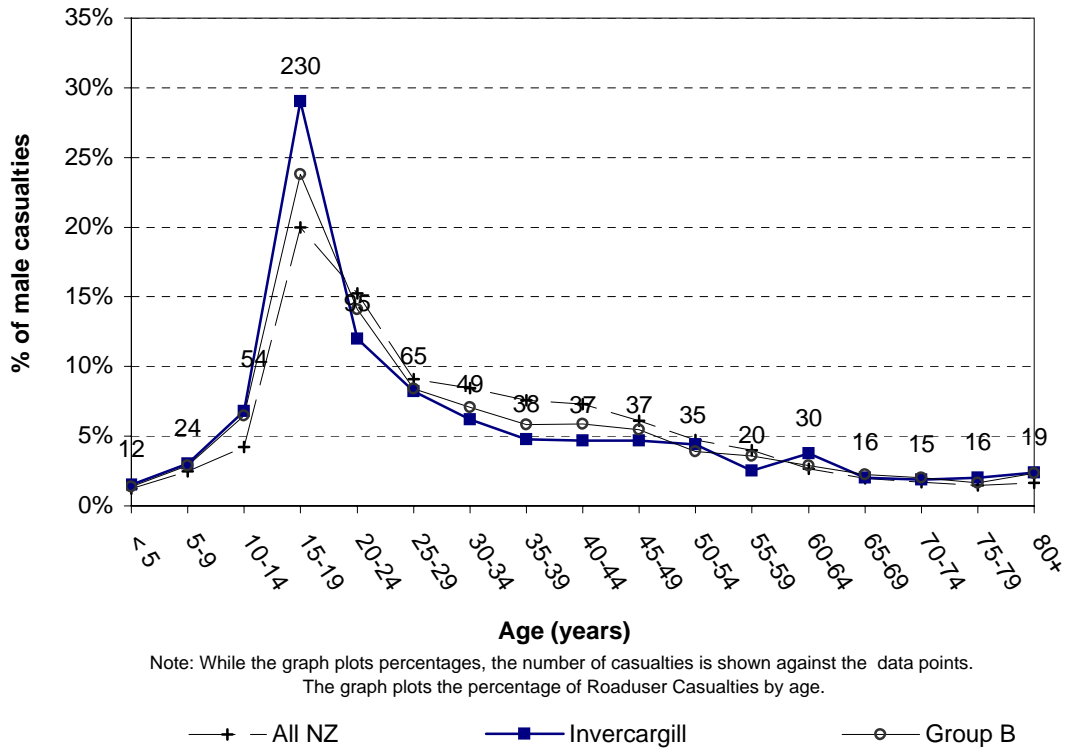
**Figure 3.4 Male/female casualties - rural  
Invercargill City**



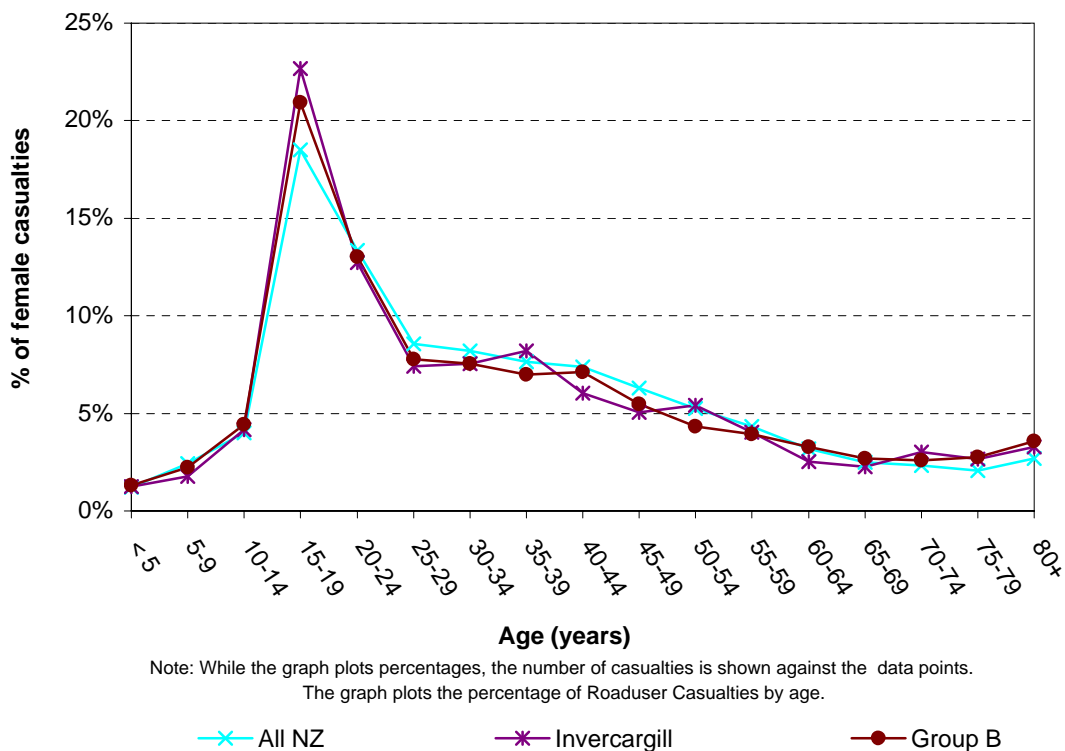




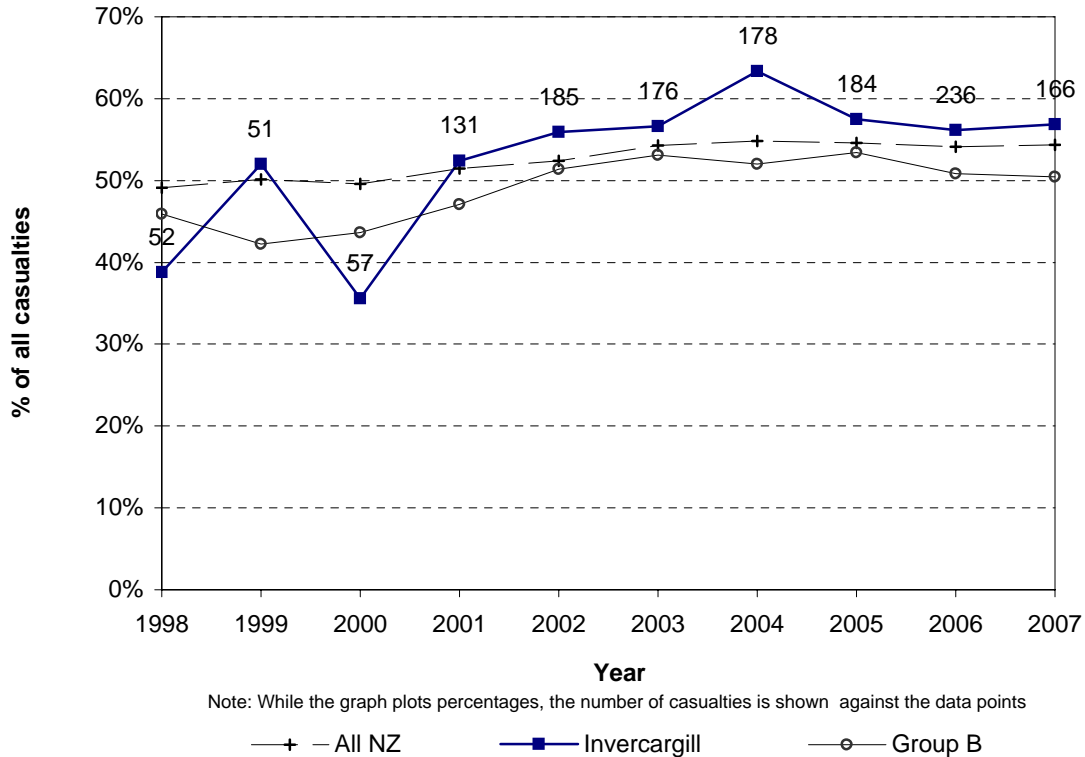
**Figure 3.5 Male casualties by age  
Invercargill City (2003-2007)**



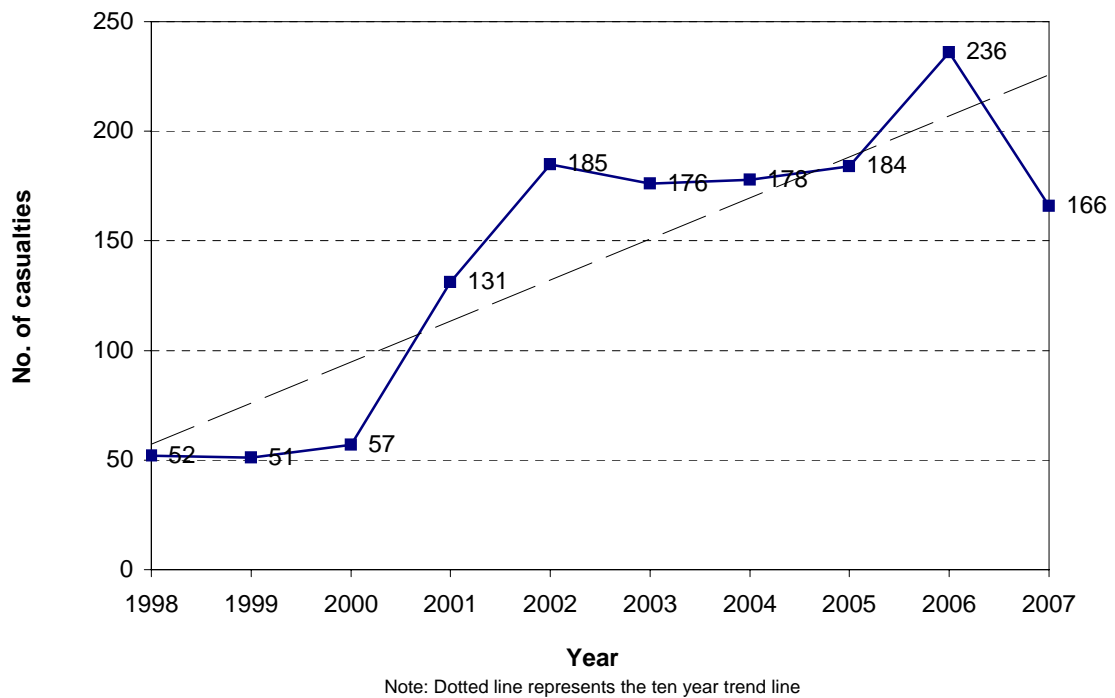
**Figure 3.6 Female casualties by age  
Invercargill City (2003-2007)**



**Figure 3.7 Car/van driver casualties  
Invercargill City**

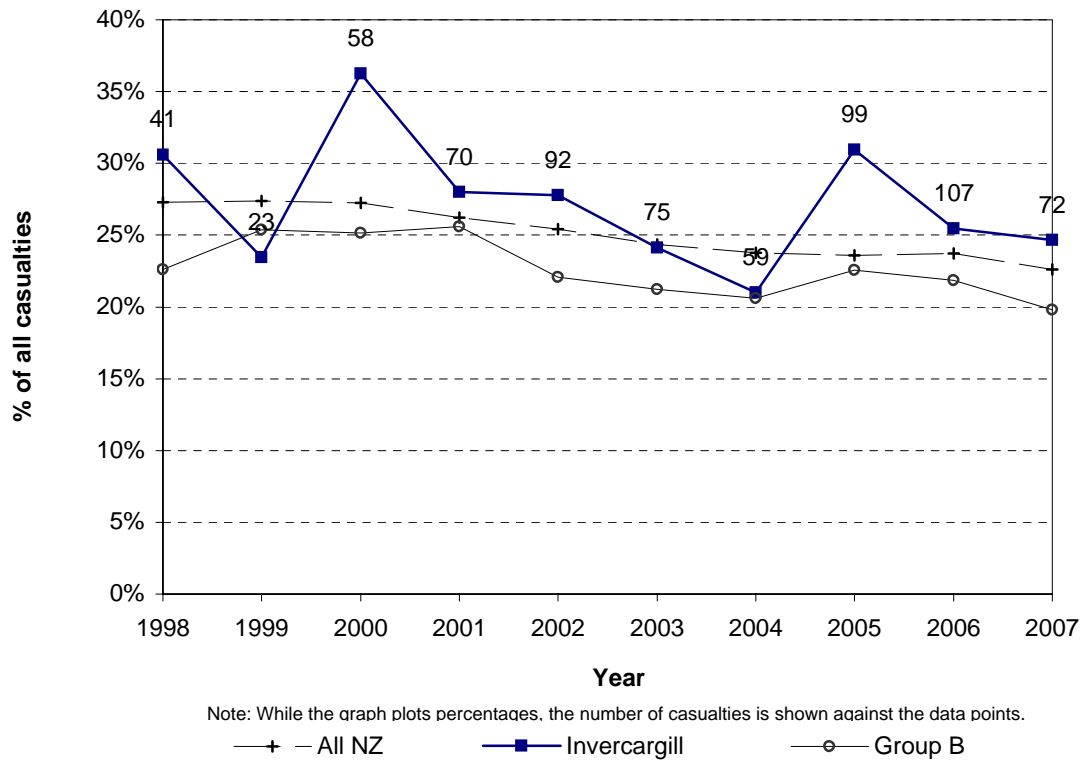


**Figure 3.8 Car/van driver casualties  
Invercargill City**

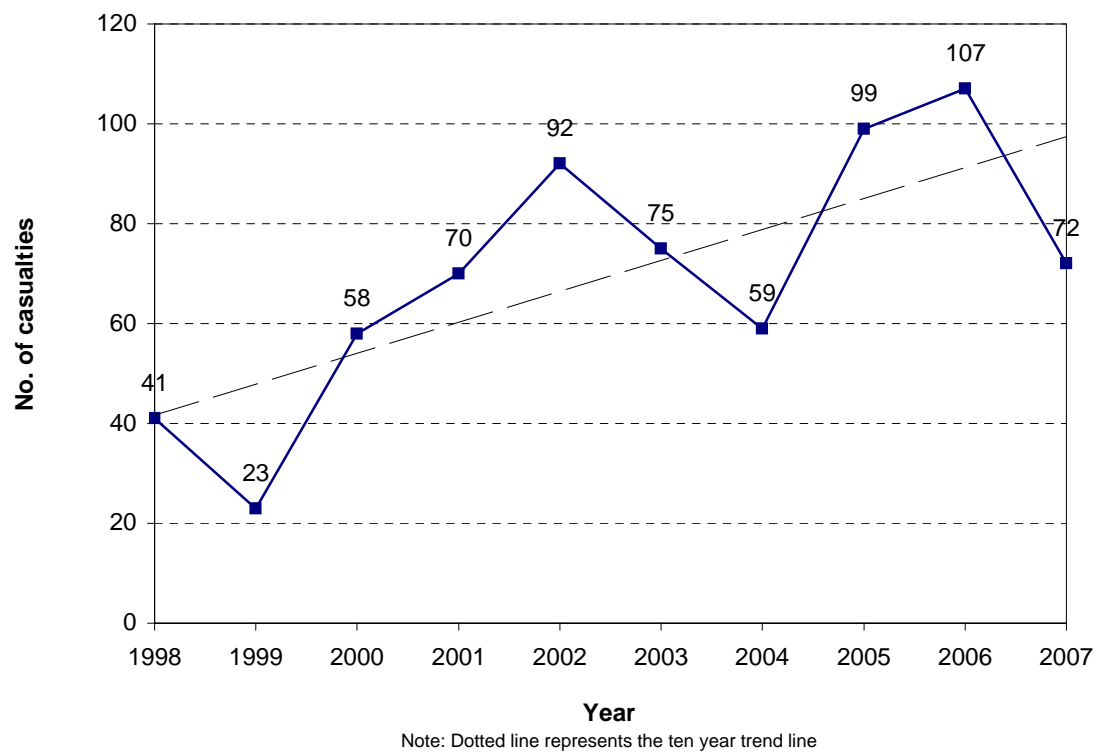




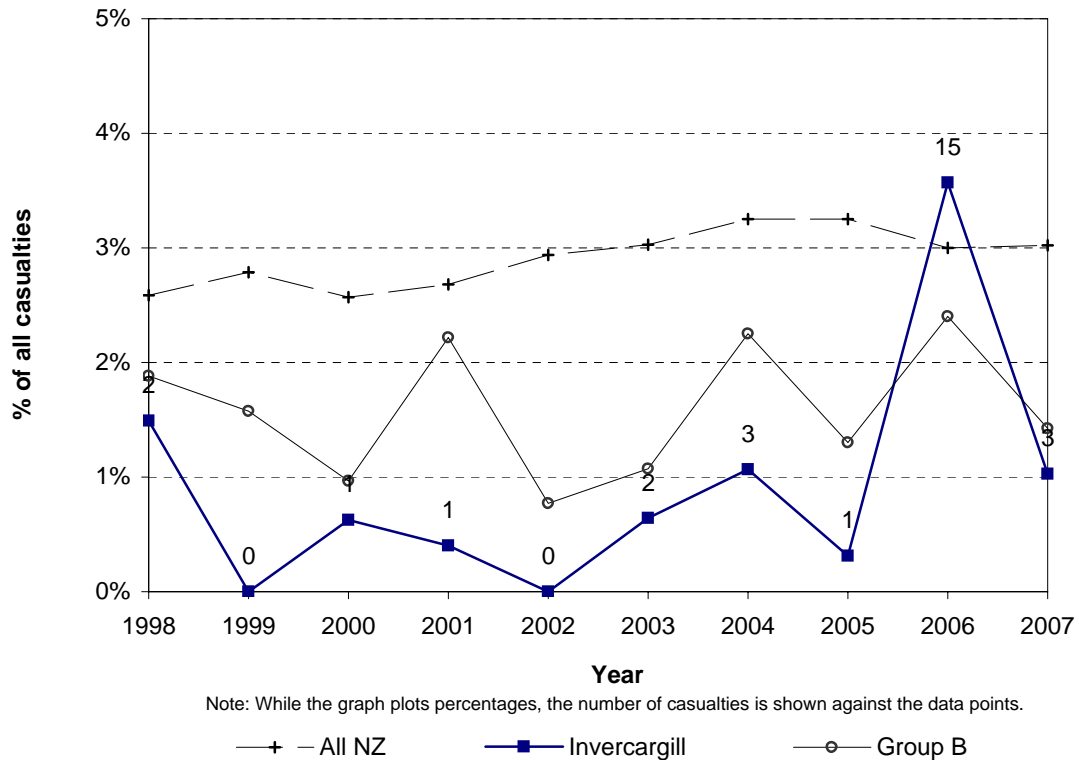
**Figure 3.9 Car/van passenger casualties  
Invercargill City**



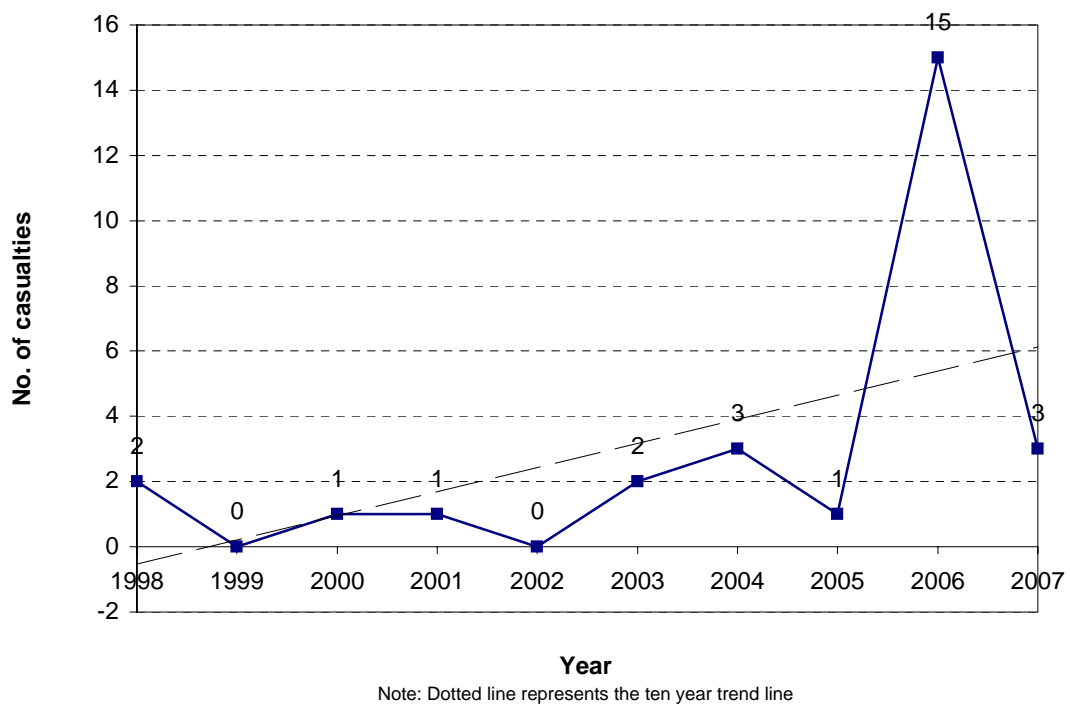
**Figure 3.10 Car/van passenger casualties  
Invercargill City**



**Figure 3.11 Heavy vehicle casualties  
Invercargill City**

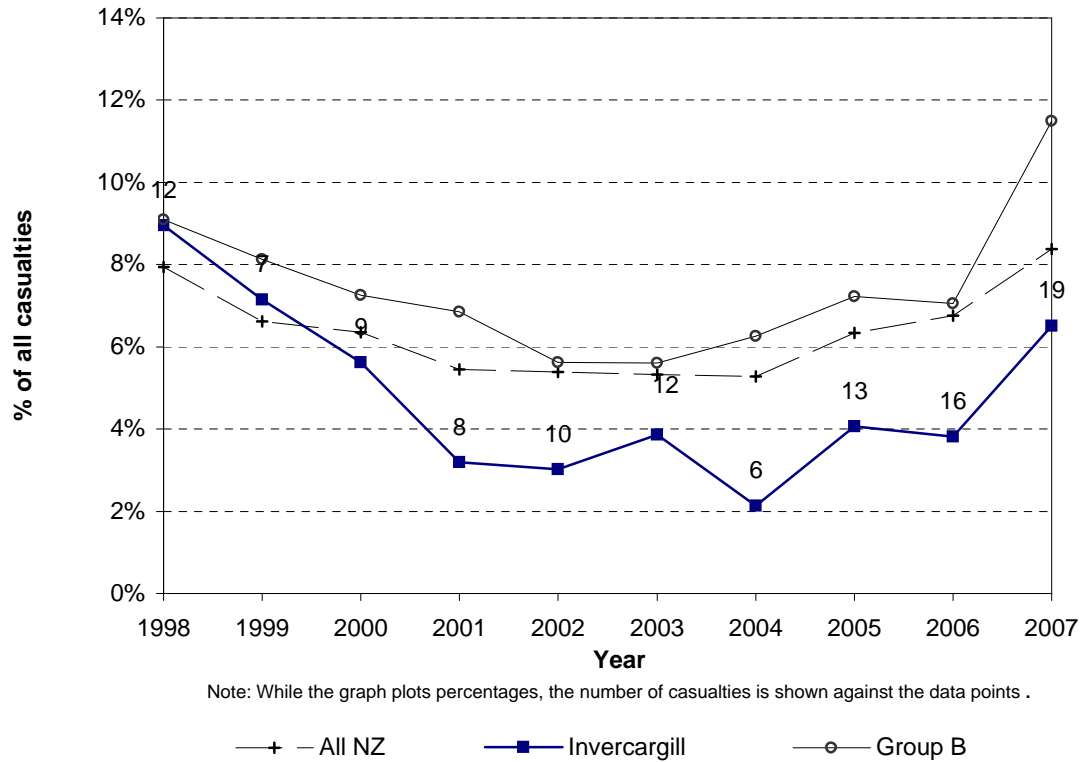


**Figure 3.12 Heavy vehicle casualties  
Invercargill City**

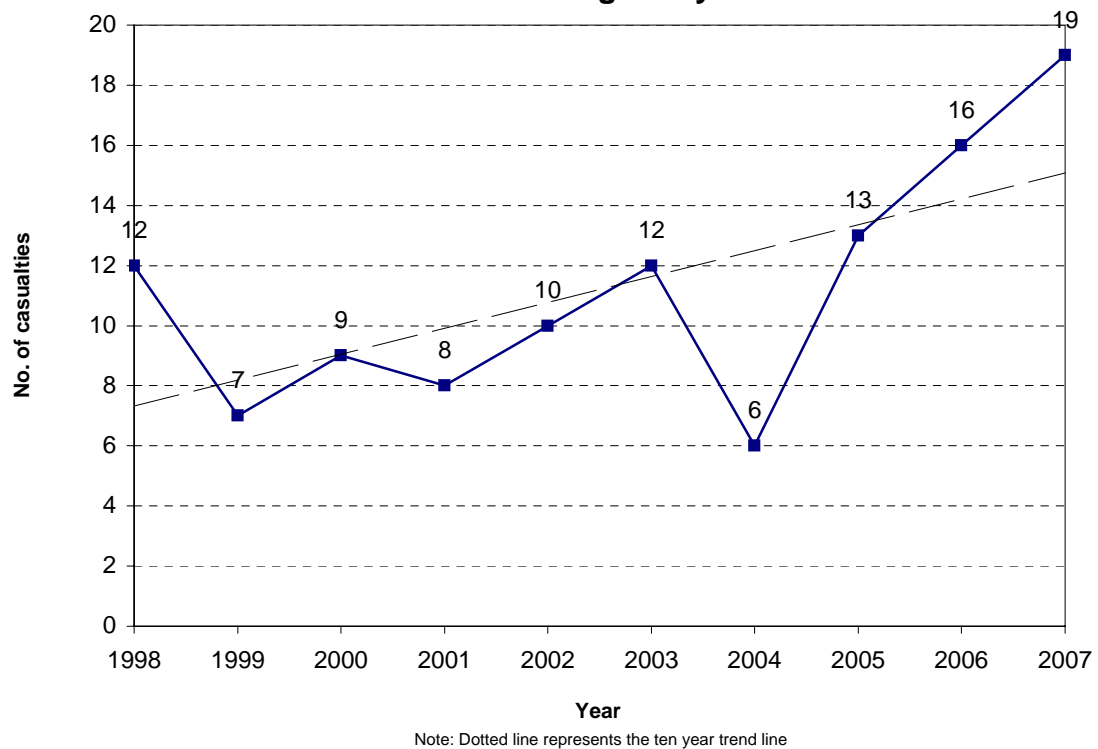




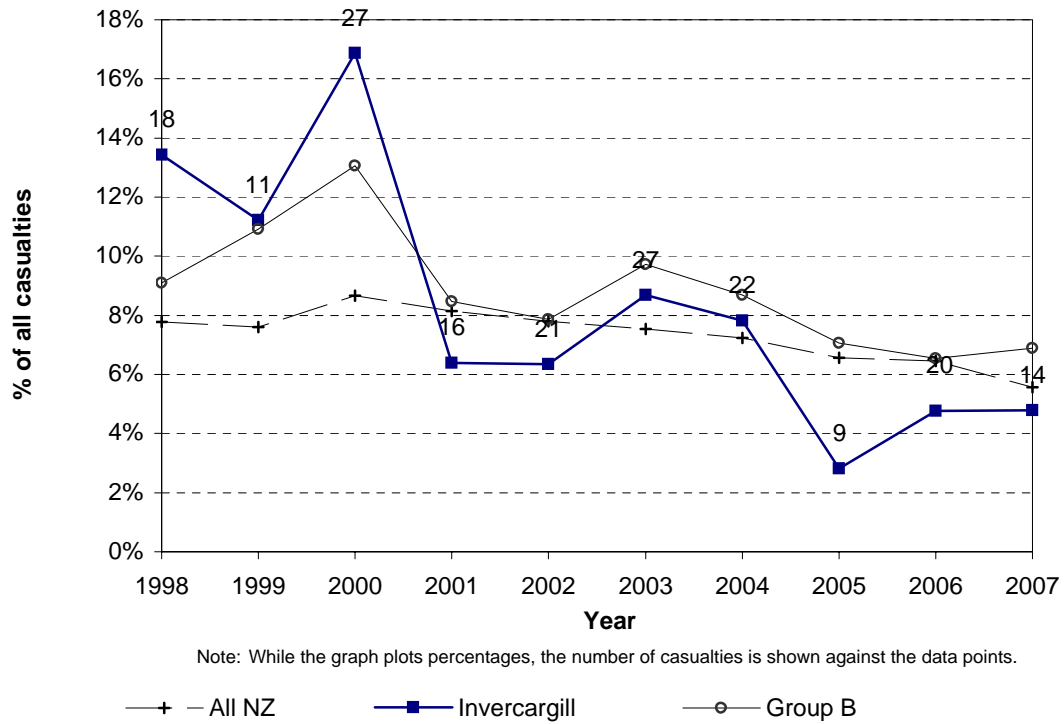
**Figure 3.13 Motorcyclist casualties  
Invercargill City**



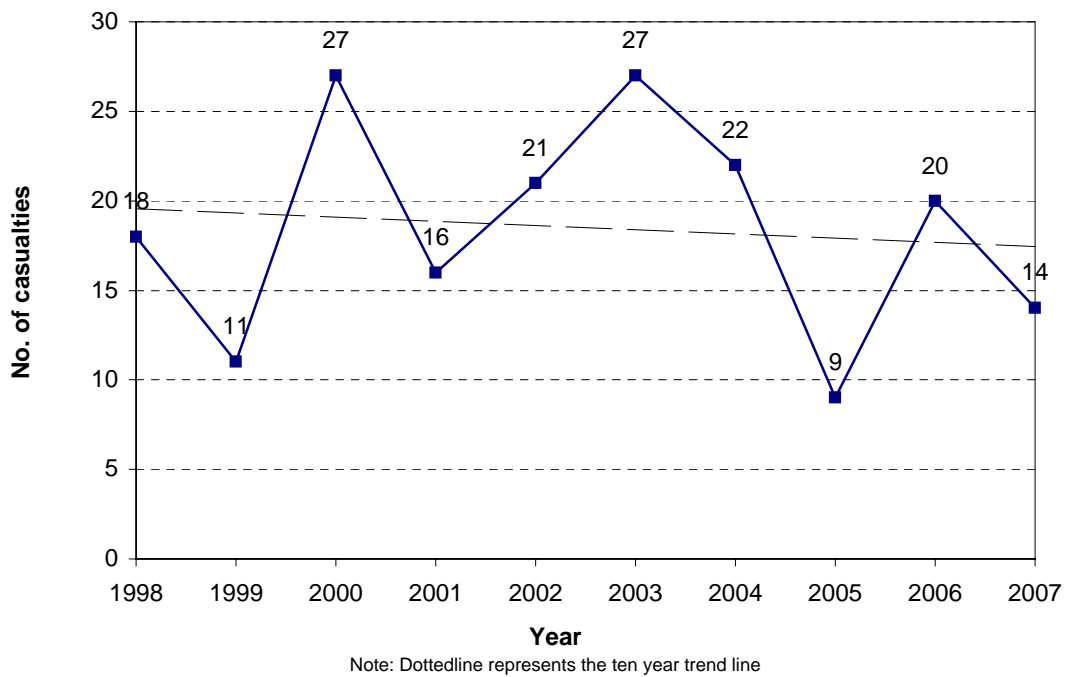
**Figure 3.14 Motorcyclist casualties  
Invercargill City**



**Figure 3.15 Pedestrian casualties  
Invercargill City**

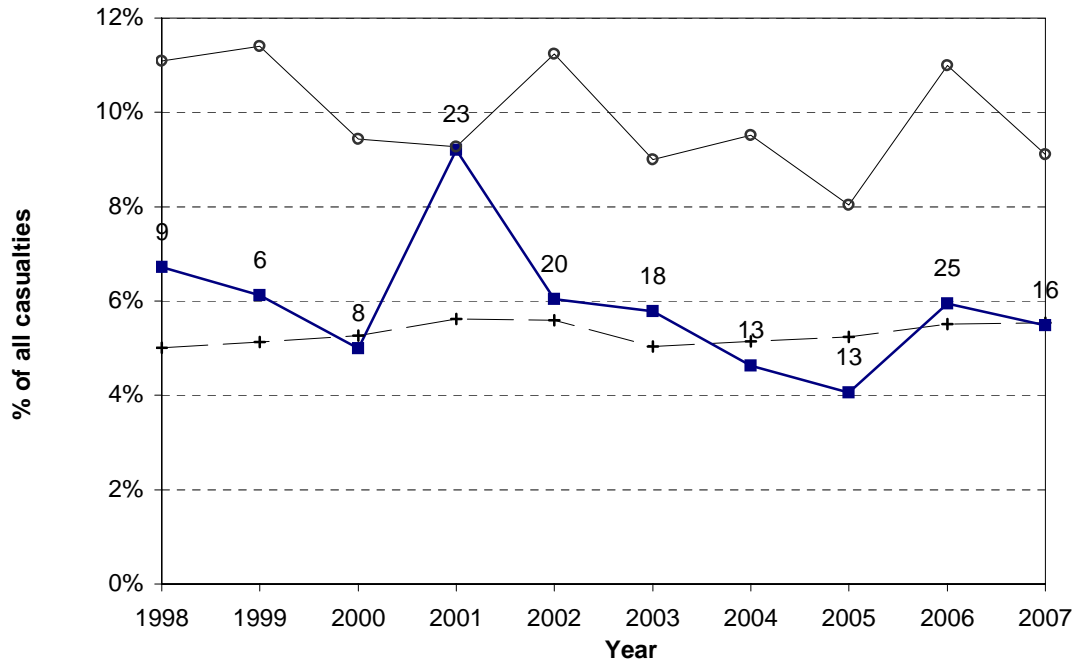


**Figure 3.16 Pedestrian casualties  
Invercargill City**





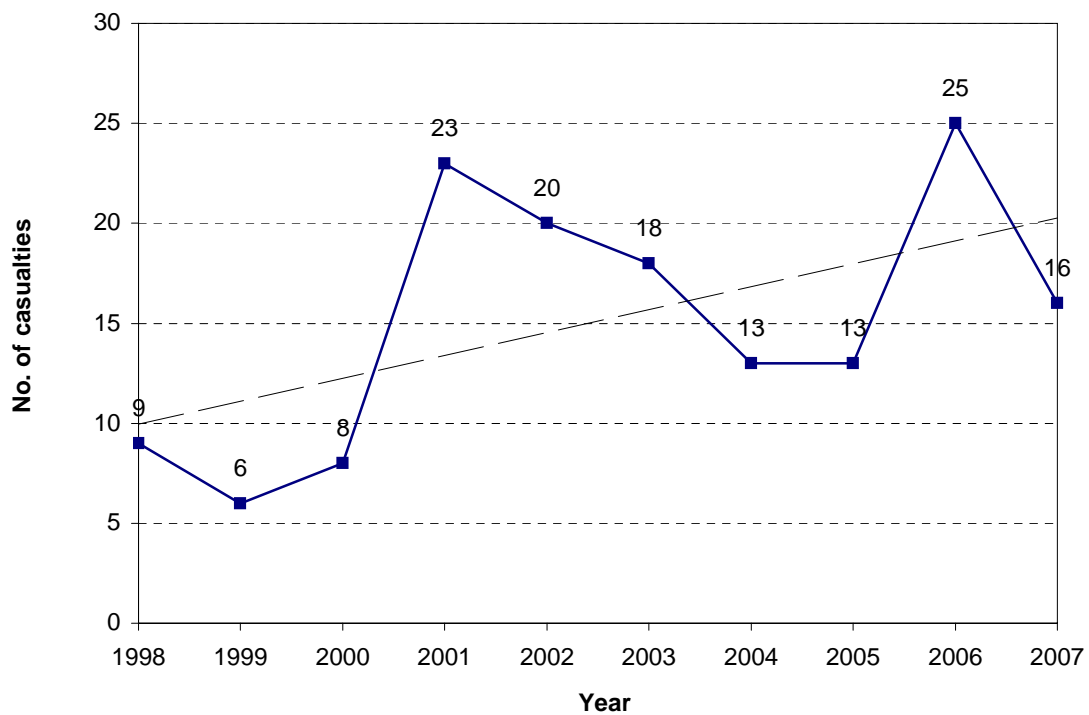
**Figure 3.17 Cyclist casualties  
Invercargill City**



Note: While the graph plots percentages, the number of casualties is shown against the data points.

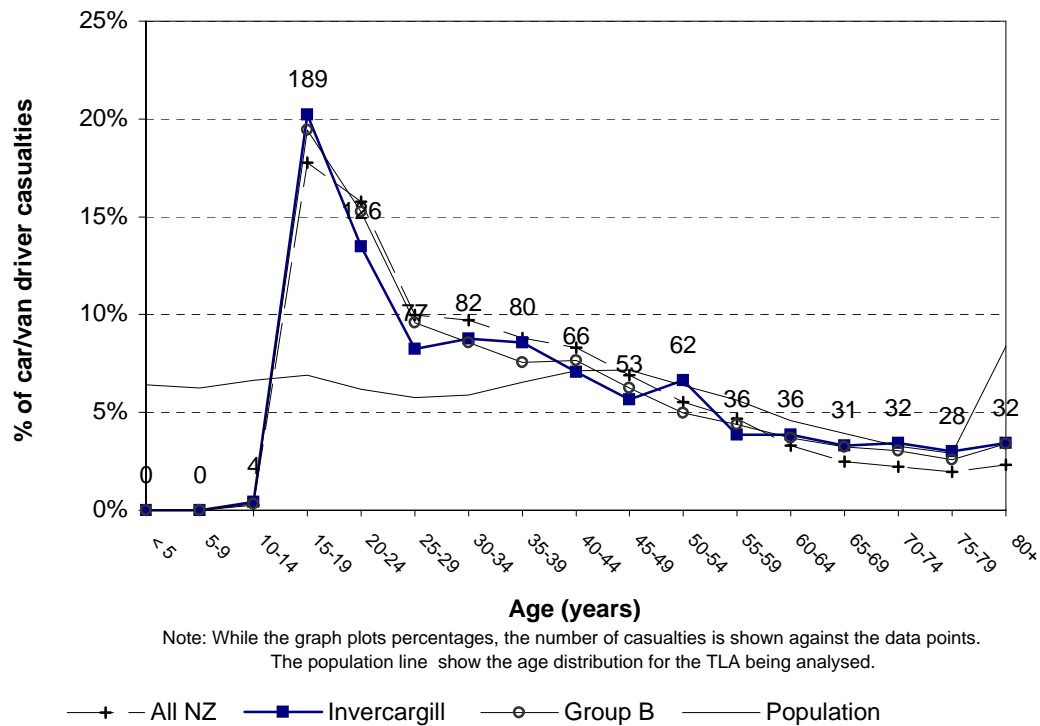
—+— All NZ      —■— Invercargill      —○— Group B

**Figure 3.18 Cyclist casualties  
Invercargill City**

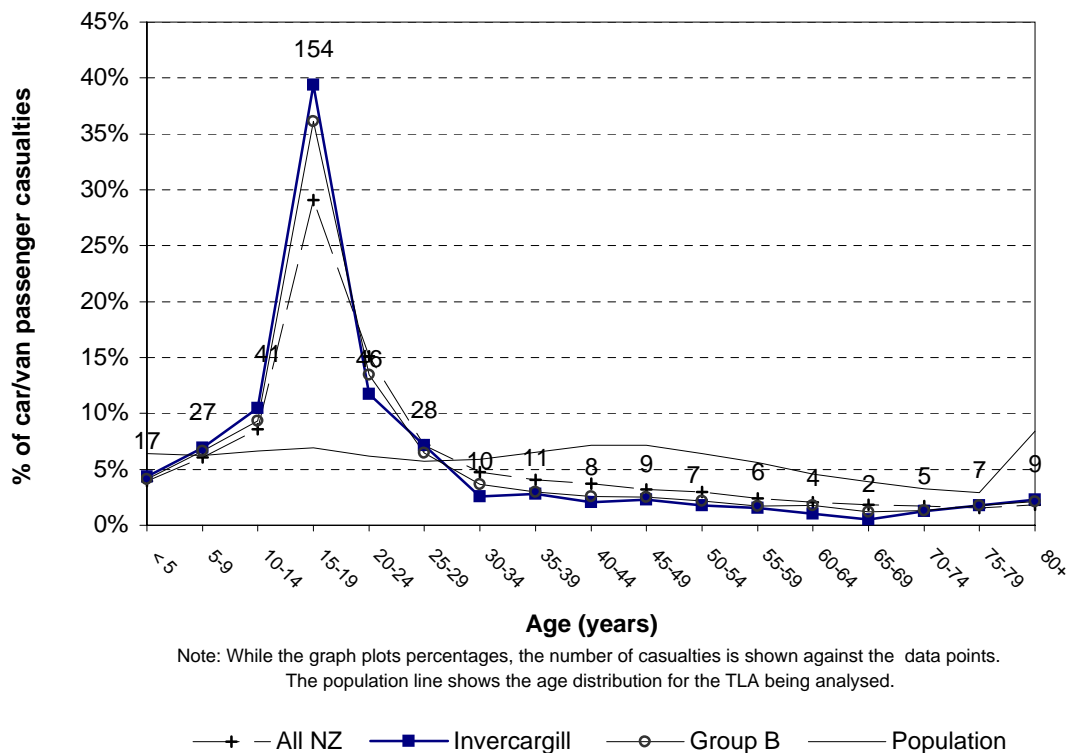


Note: Dotted line represents the ten year trend line

**Figure 3.19 Car/van driver casualty age  
Invercargill City (2003-2007)**



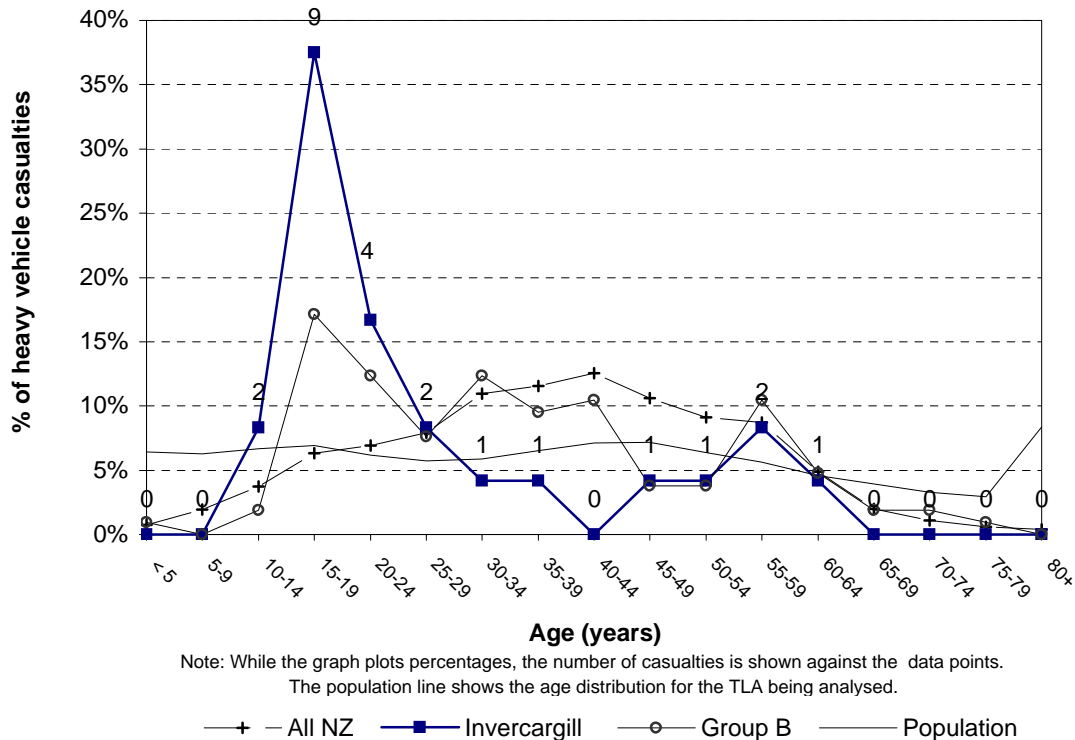
**Figure 3.20 Car/van passenger casualty age  
Invercargill City (2003-2007)**



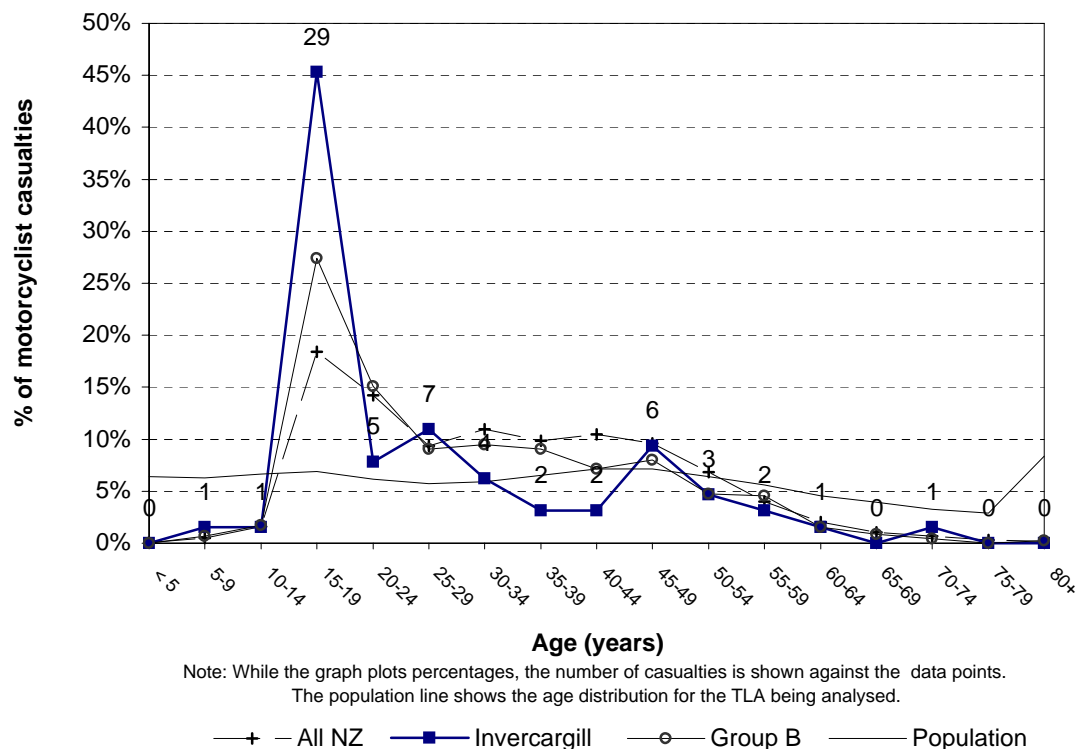




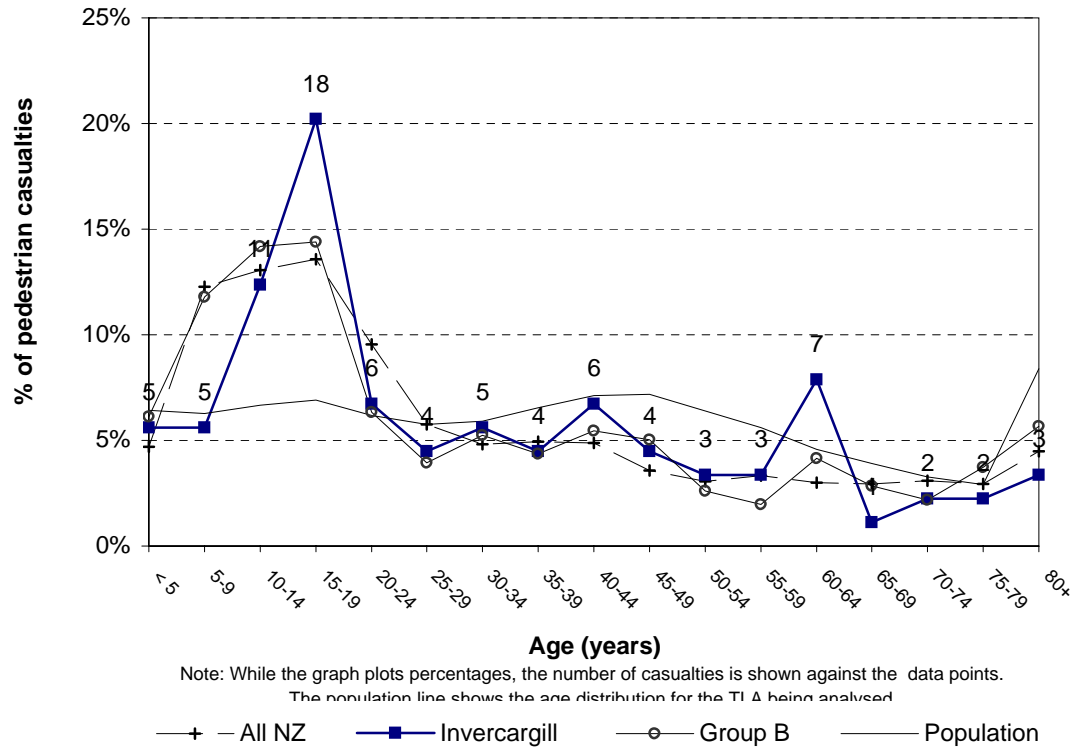
**Figure 3.21 Heavy vehicle casualty age  
Invercargill City (2003-2007)**



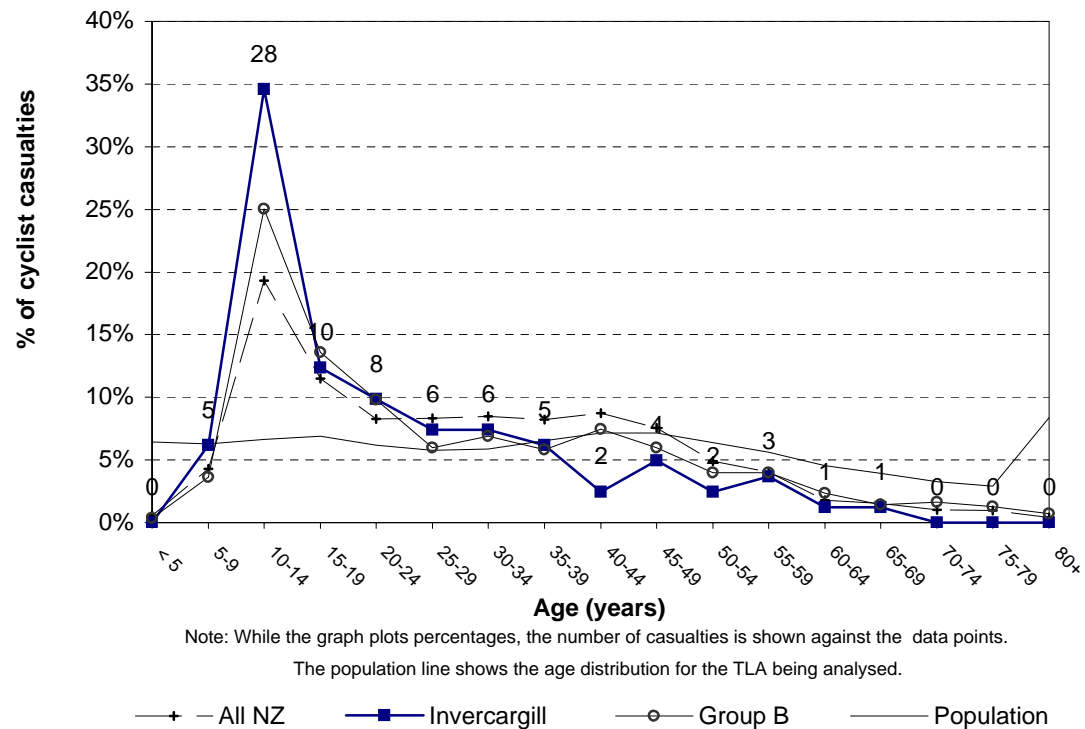
**Figure 3.22 Motorcyclist casualty age  
Invercargill City (2003-2007)**



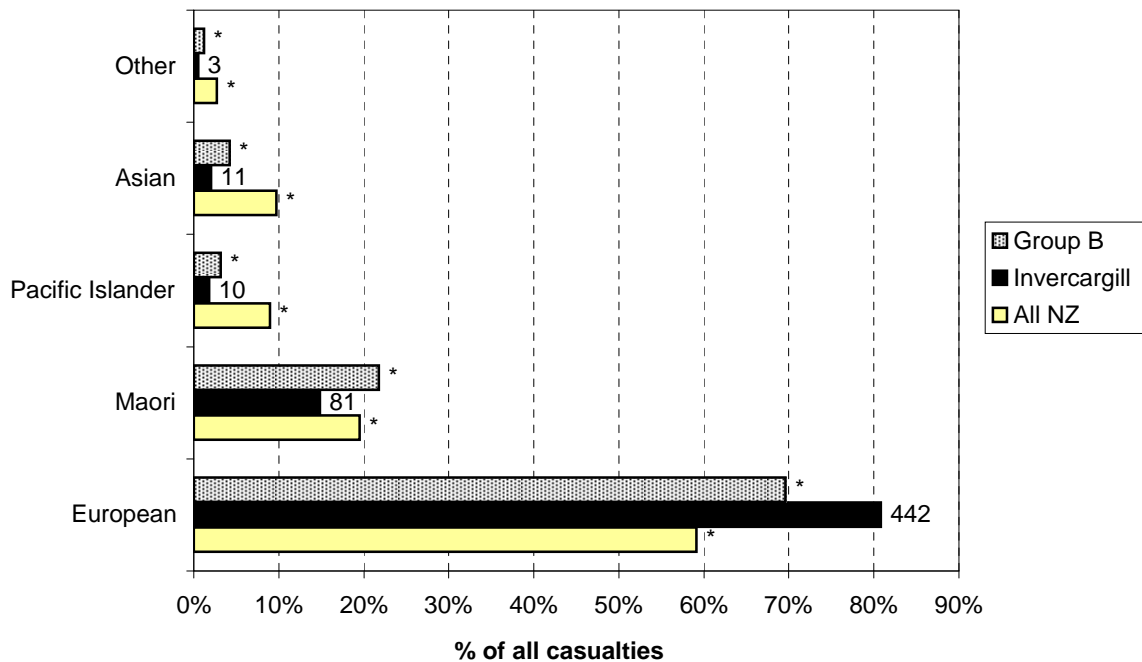
**Figure 3.23 Pedestrian casualty age  
Invercargill City (2003-2007)**



**Figure 3.24 Cyclist casualty age  
Invercargill City (2003-2007)**

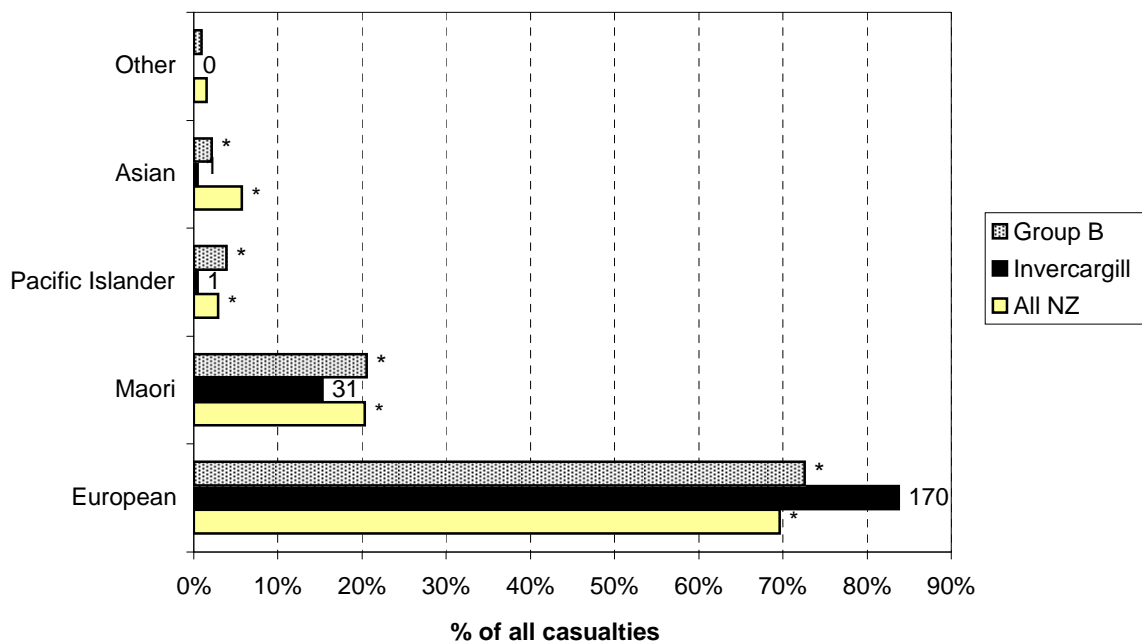


**Figure 3.25 Casualty ethnicity - urban  
Invercargill City (2003-2007)**



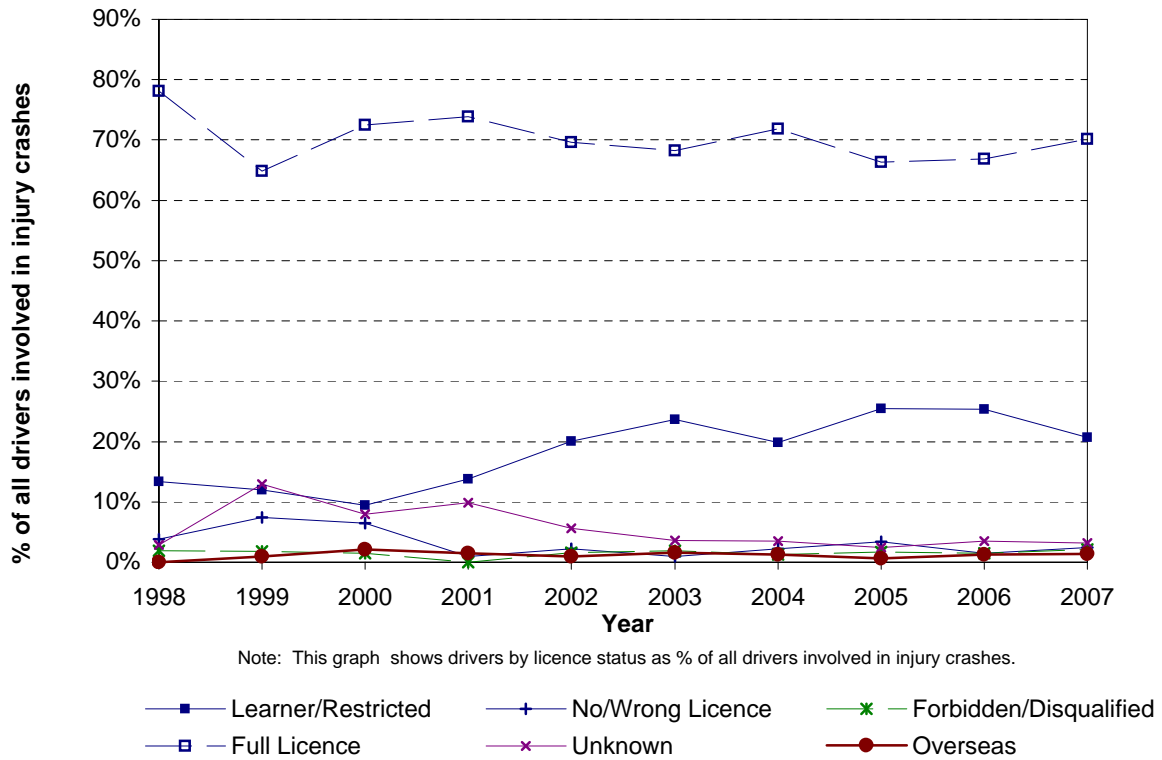
Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 3.26 Casualty ethnicity - rural  
Invercargill City (2003-2007)**

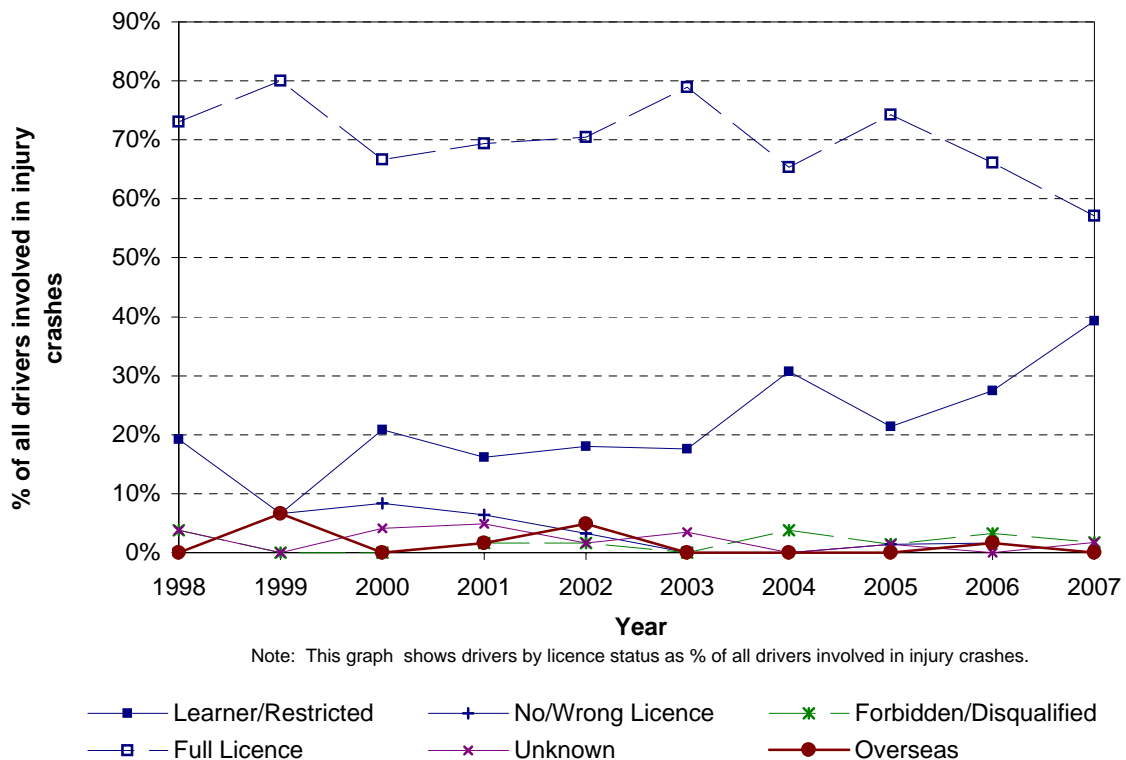


Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 3.27 Licence status - urban  
Invercargill City**



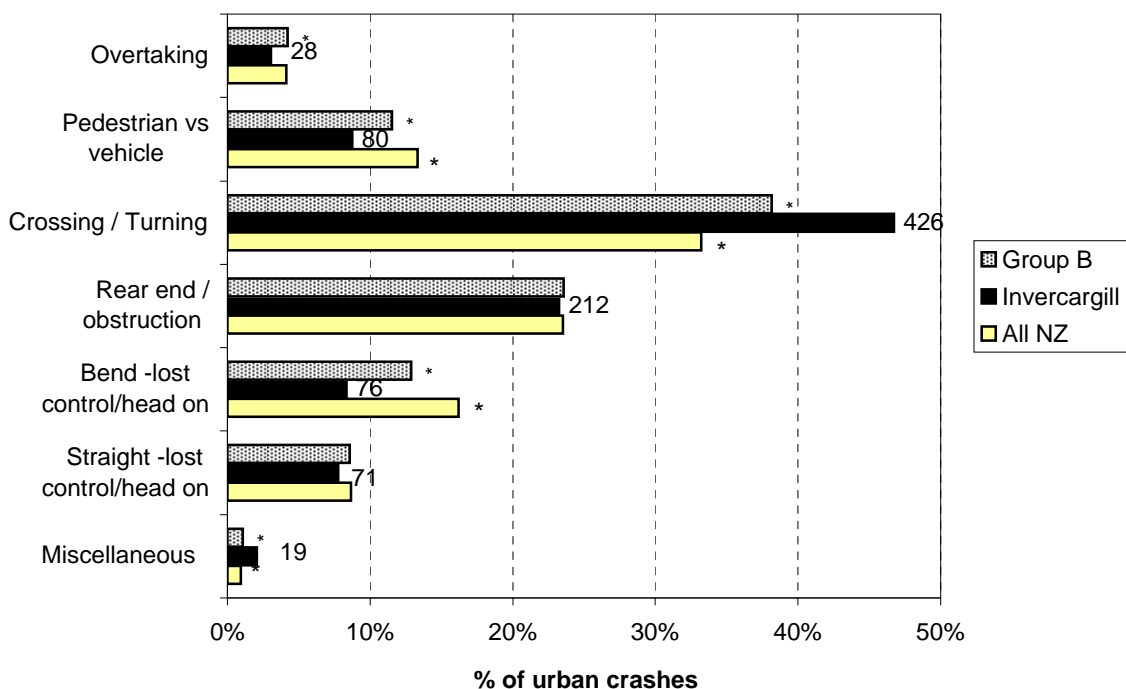
**Figure 3.28 Licence status - rural  
Invercargill City**



# *Crash type statistics*

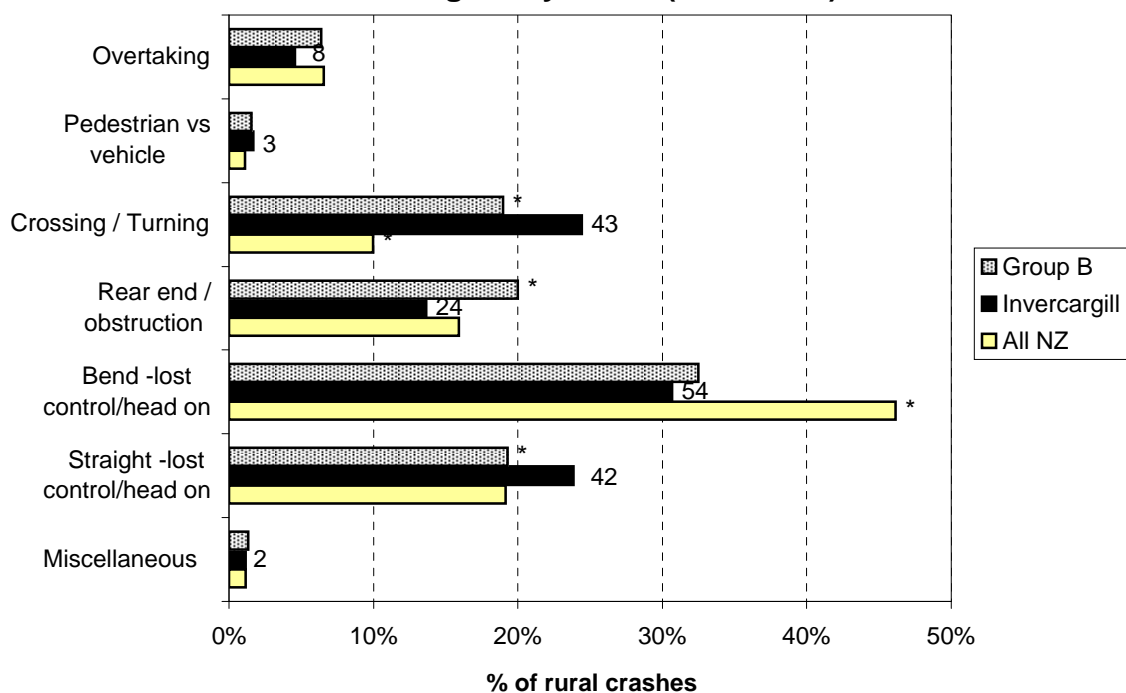


**Figure 4.1 Crash movement type - urban  
Invercargill City (2003-2007)**



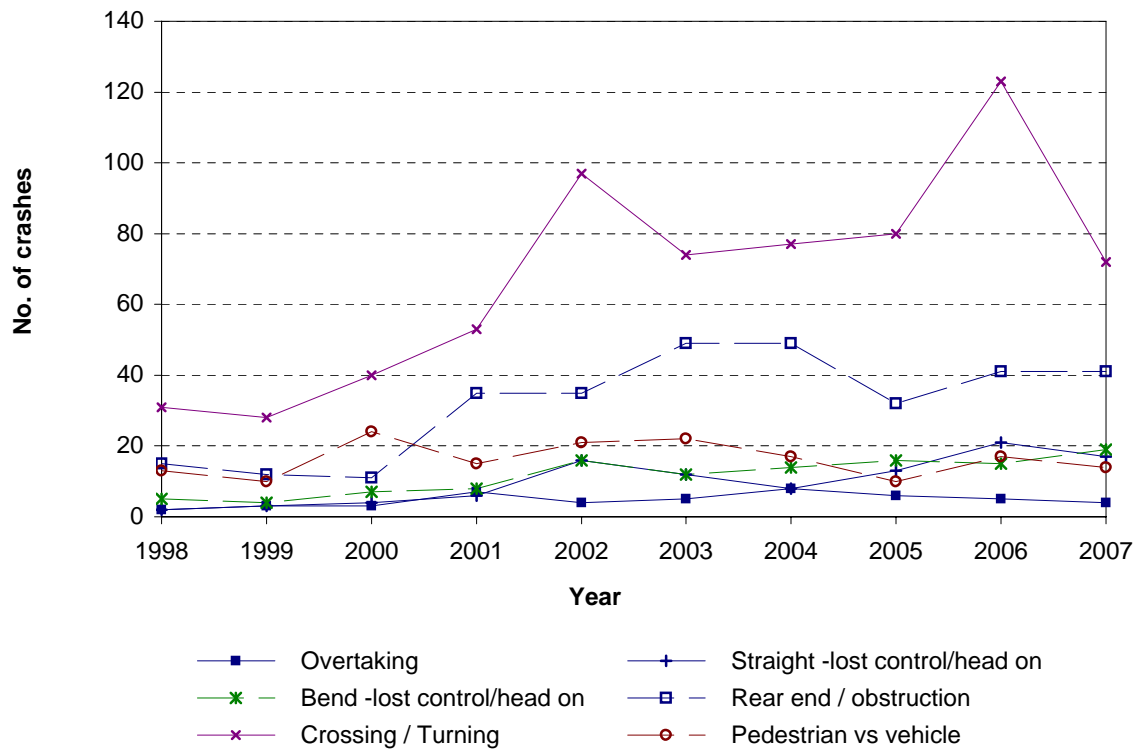
Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 4.2 Crash movement type - rural  
Invercargill City roads (2003-2007)**

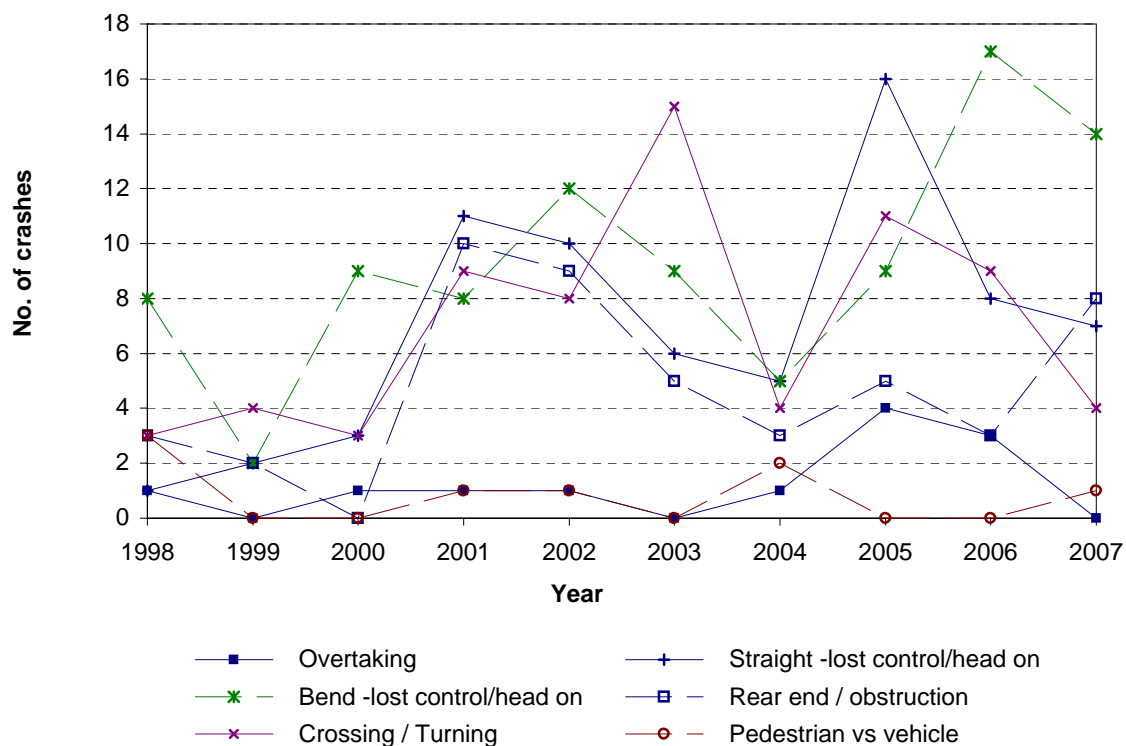


Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 4.3 Crash movement type - trends  
Invercargill City - urban roads**

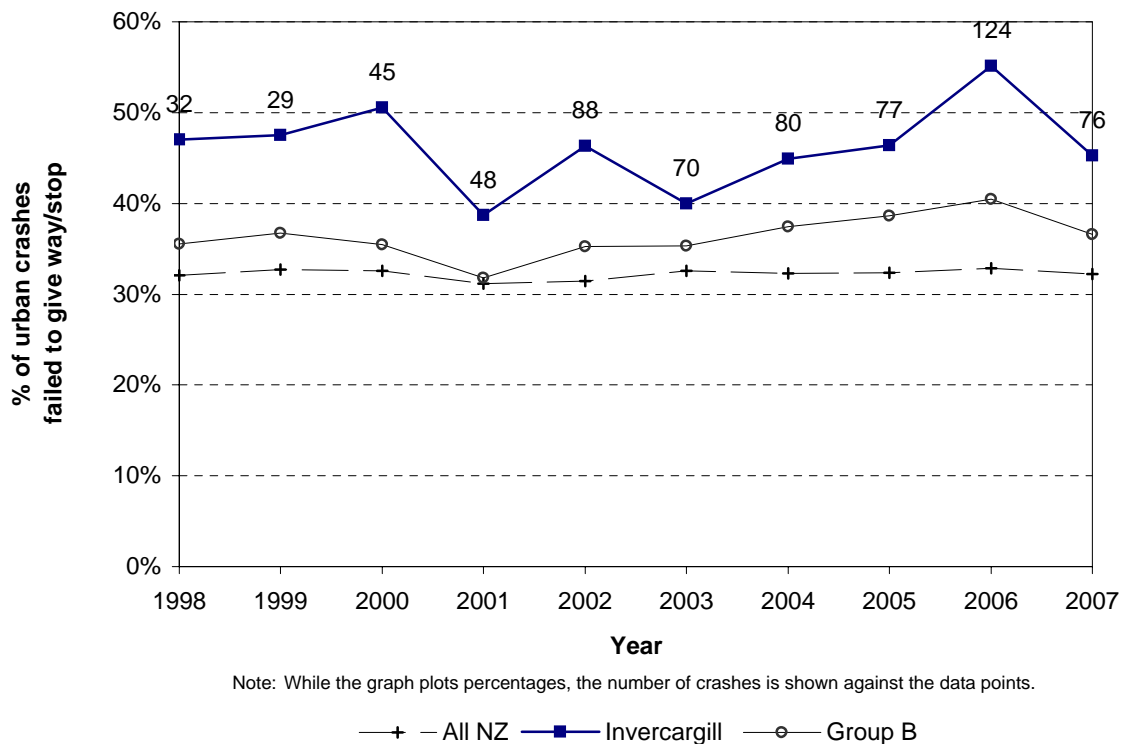


**Figure 4.4 Crash movement type - trends  
Invercargill City - rural roads**

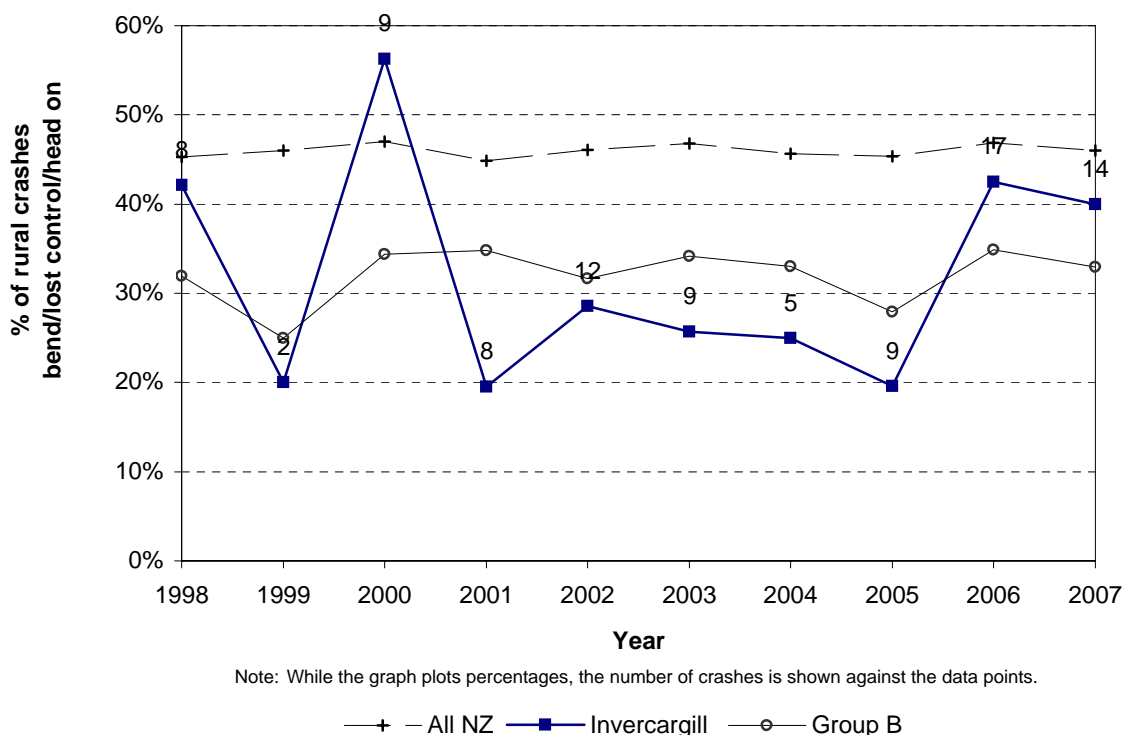




**Figure 4.5 Failed to give way / stop  
Invercargill City - urban roads**



**Figure 4.6 Bend - lost control / head - on  
Invercargill City - rural roads**

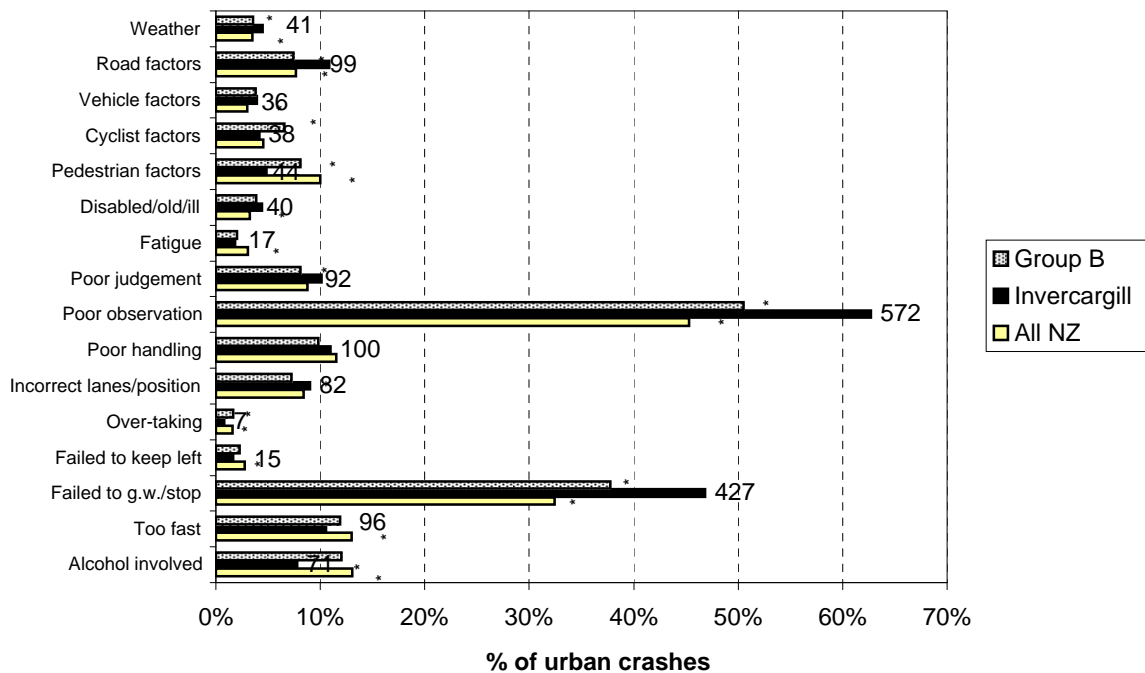




# *Crash factor statistics*

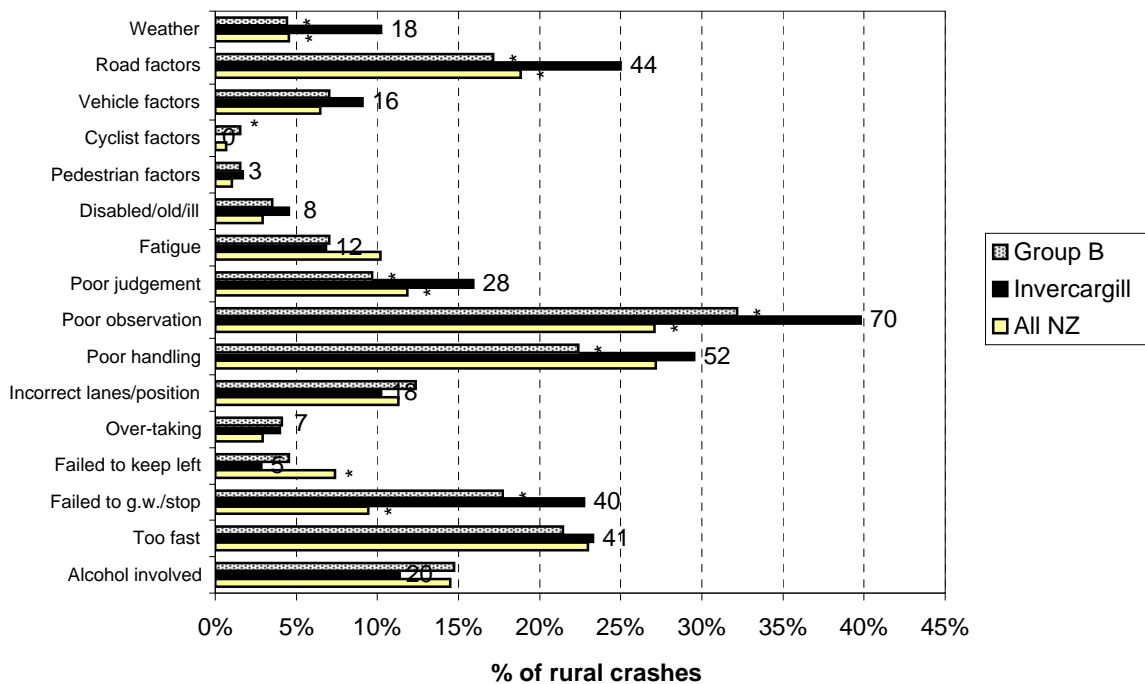


**Figure 5.1 Contributing factors - urban  
Invercargill City (2003-2007)**



Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 5.2 Contributing factors - rural  
Invercargill City (2003-2007)**

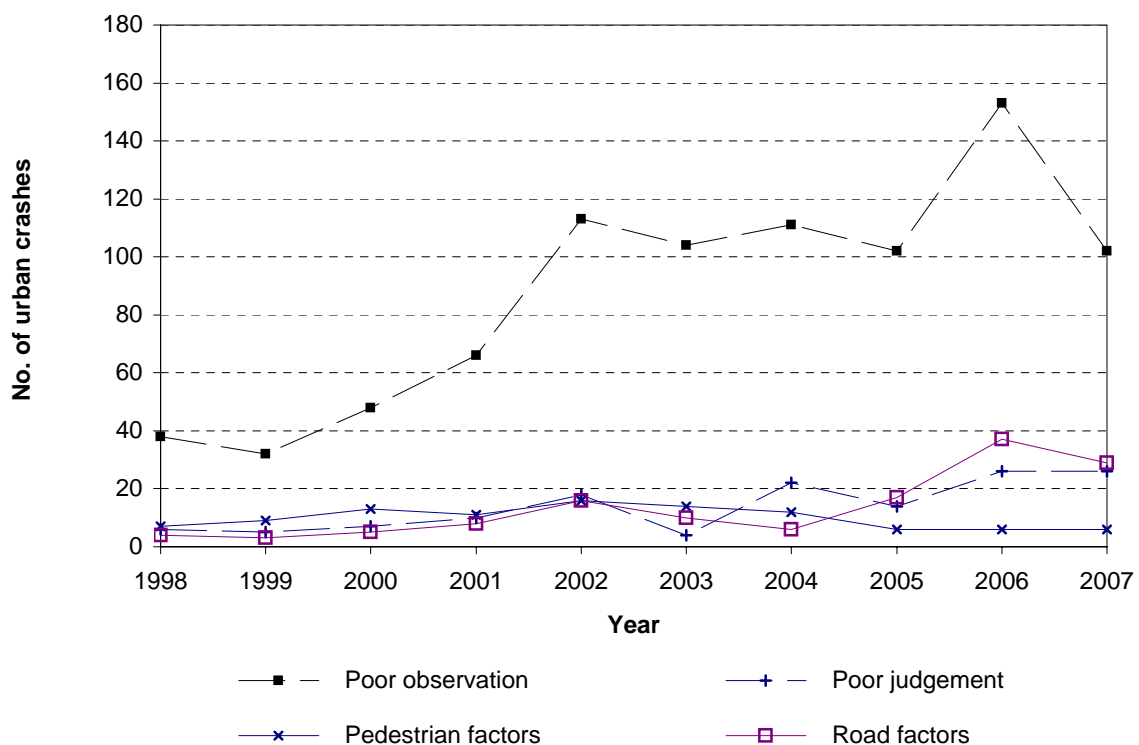


Note: While the graph plots percentages, the number of casualties is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

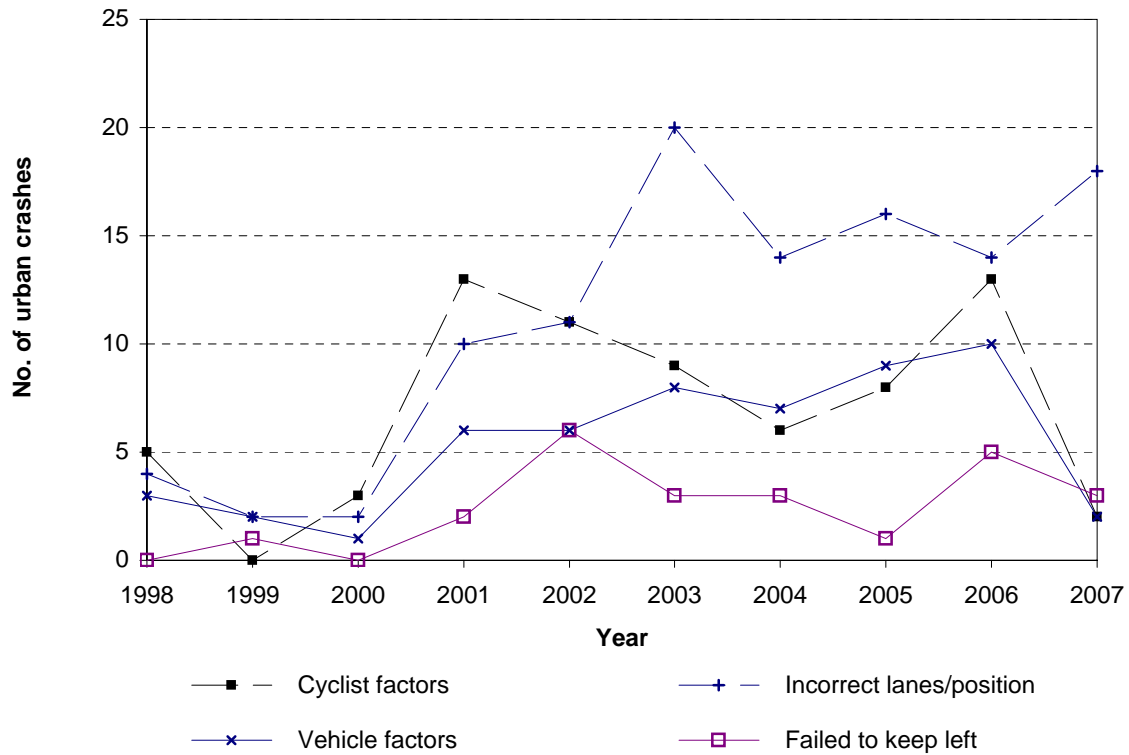
**Figure 5.3 Contributing factor trends  
Invercargill City - urban roads**



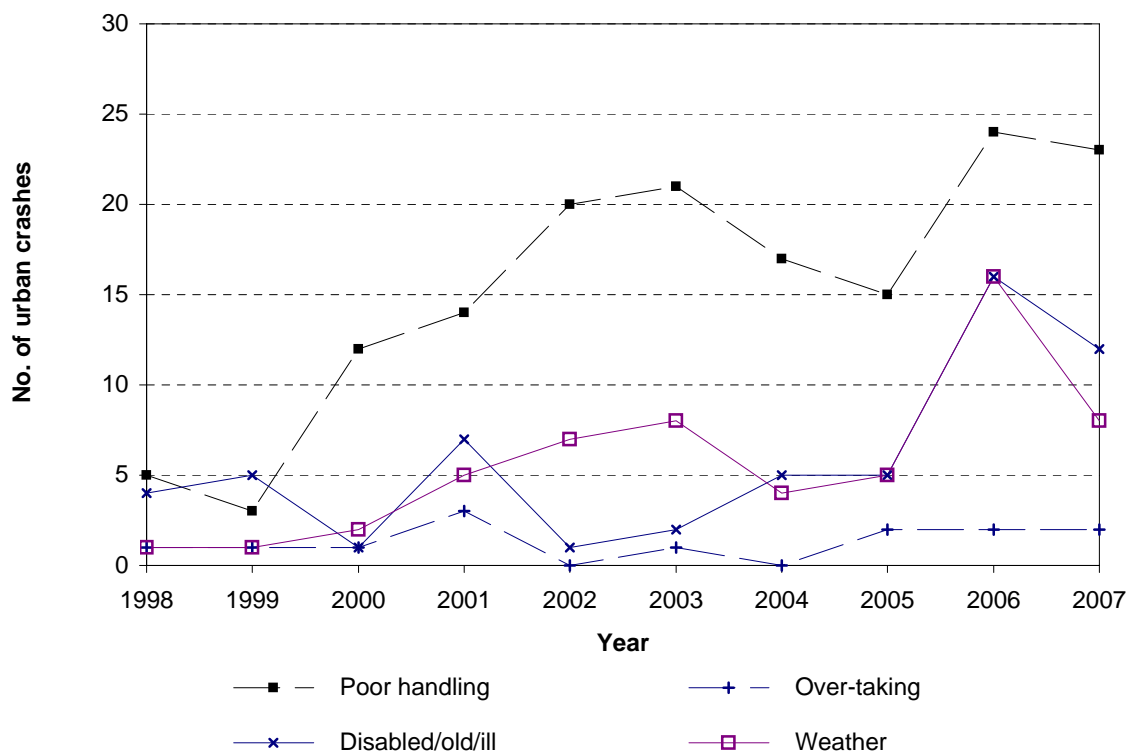
**Figure 5.4 Contributing factor trends  
Invercargill City - urban roads**



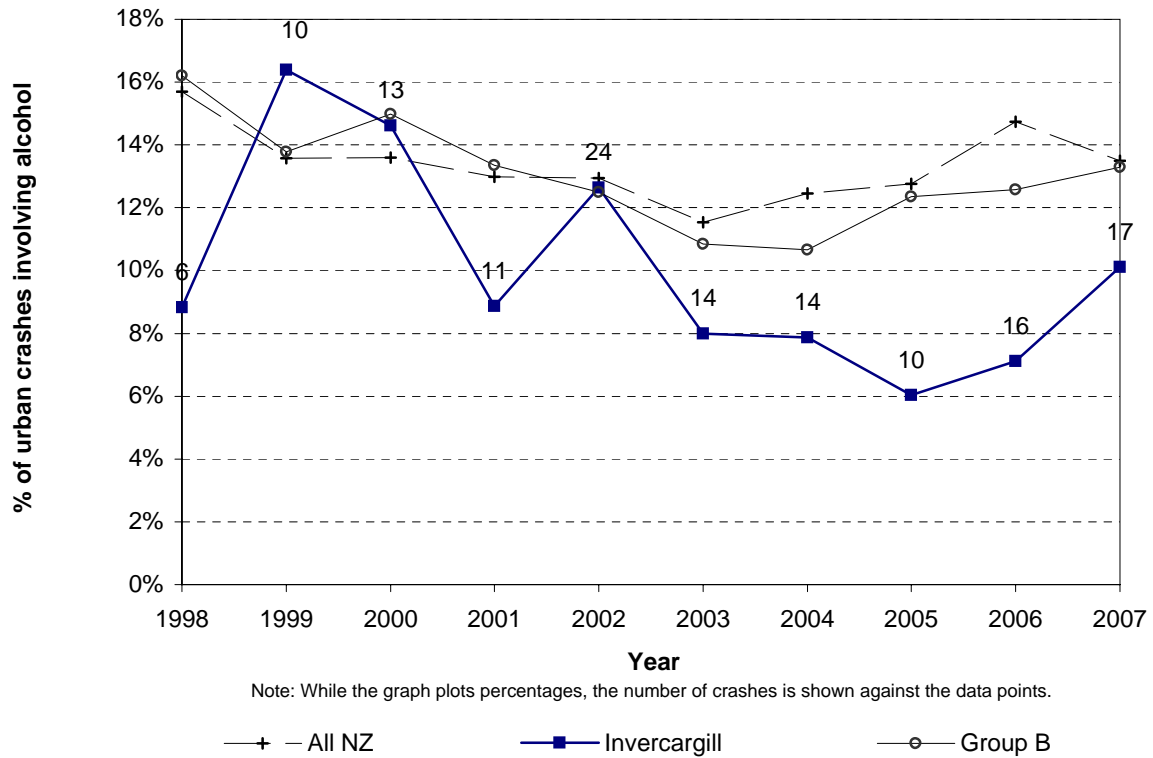
**Figure 5.5 Contributing factor trends  
Invercargill City - urban roads**



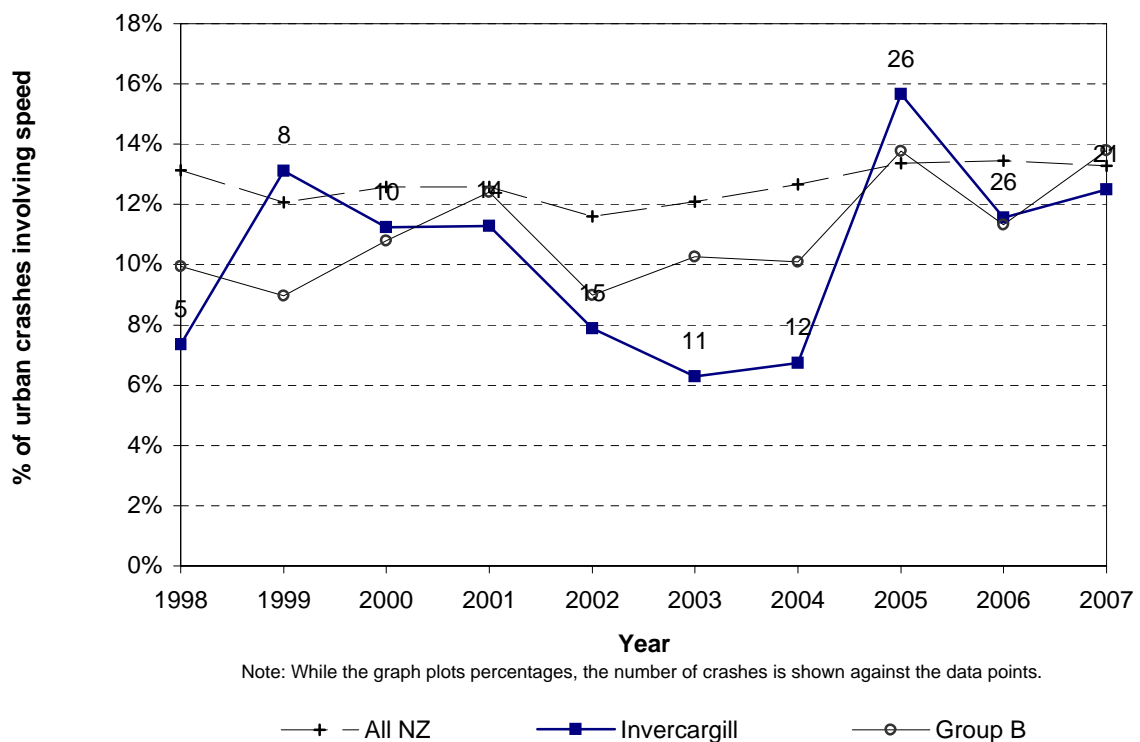
**Figure 5.6 Contributing factor trends  
Invercargill City - urban roads**



**Figure 5.7 Alcohol involved trend  
Invercargill City - urban roads**

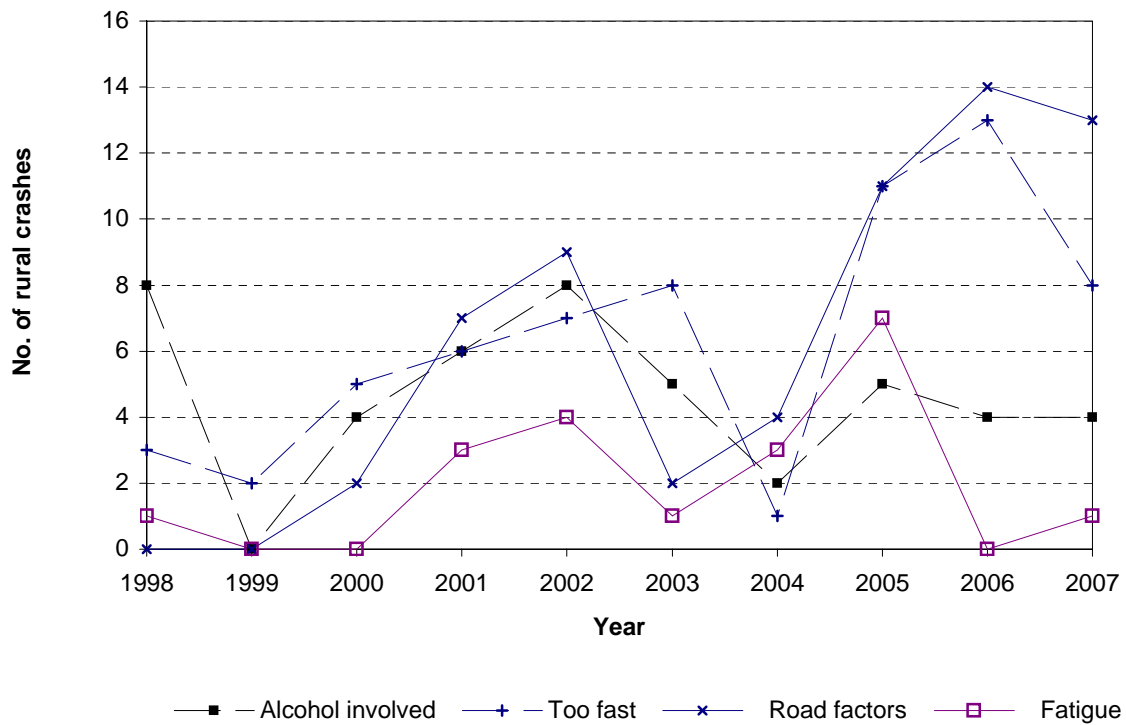


**Figure 5.8 Speed involved trend  
Invercargill City - urban roads**

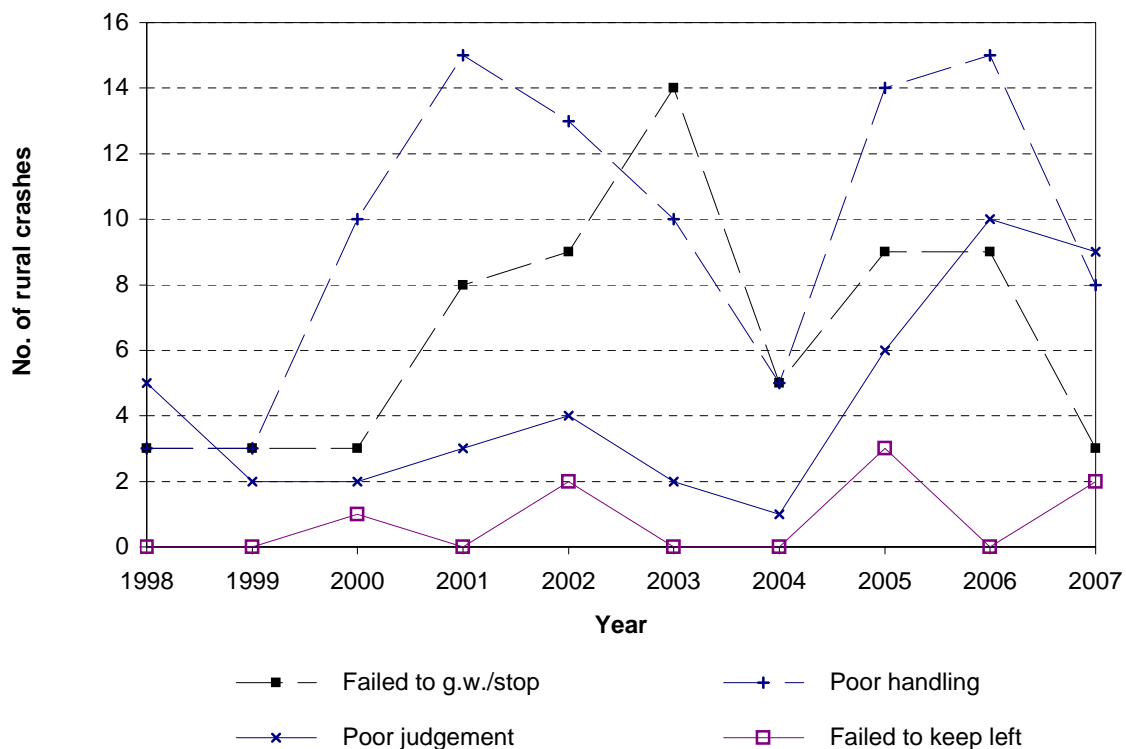




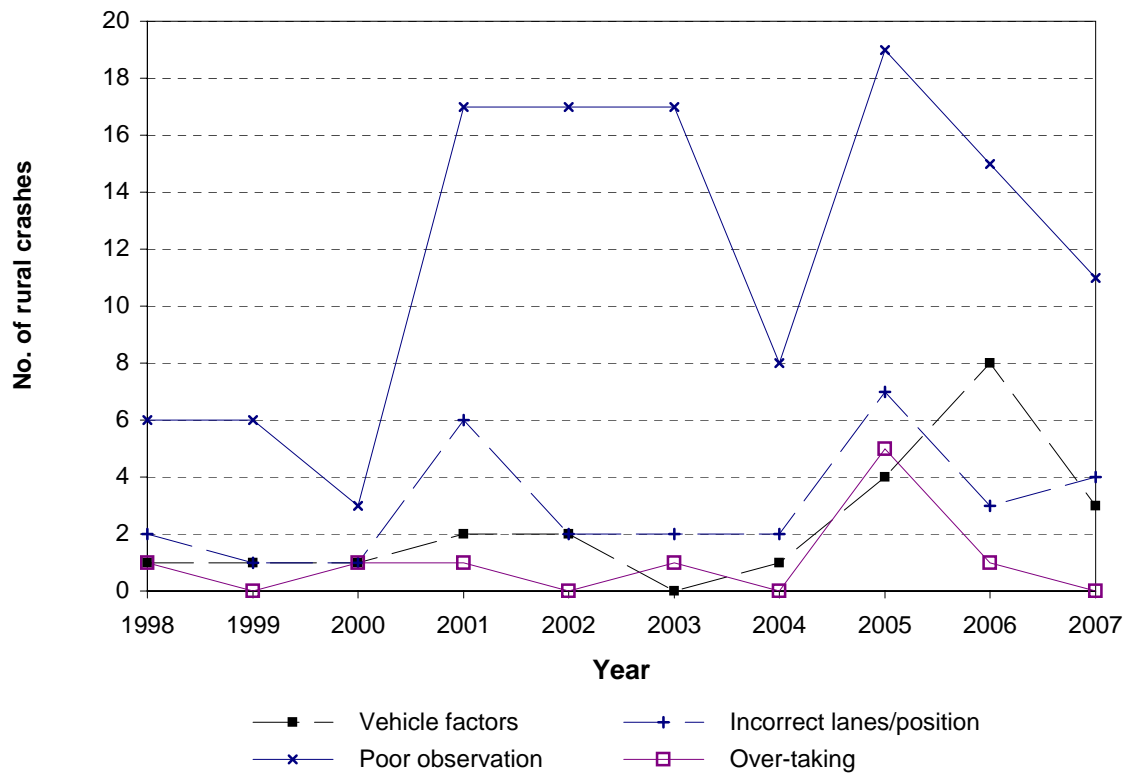
**Figure 5.9 Contributing factor trends  
Invercargill City - rural roads**



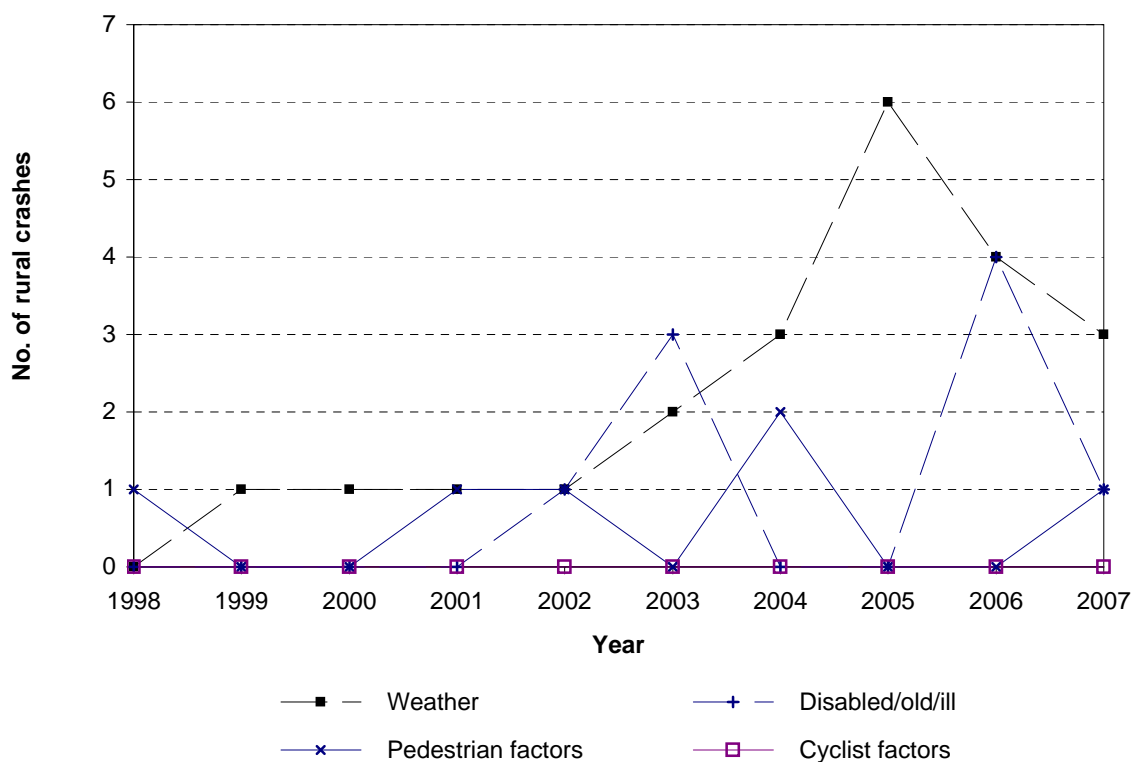
**Figure 5.10 Contributing factor trends  
Invercargill City - rural roads**



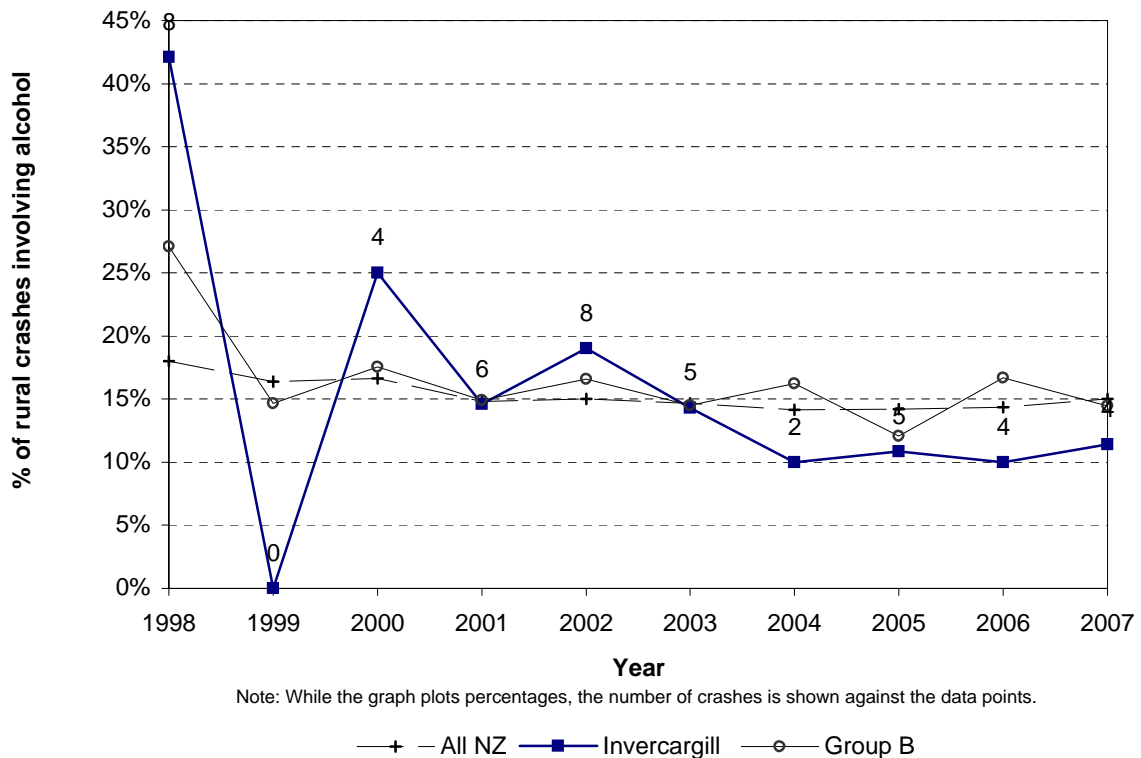
**Figure 5.11 Contributing factor trends  
Invercargill City - rural roads**



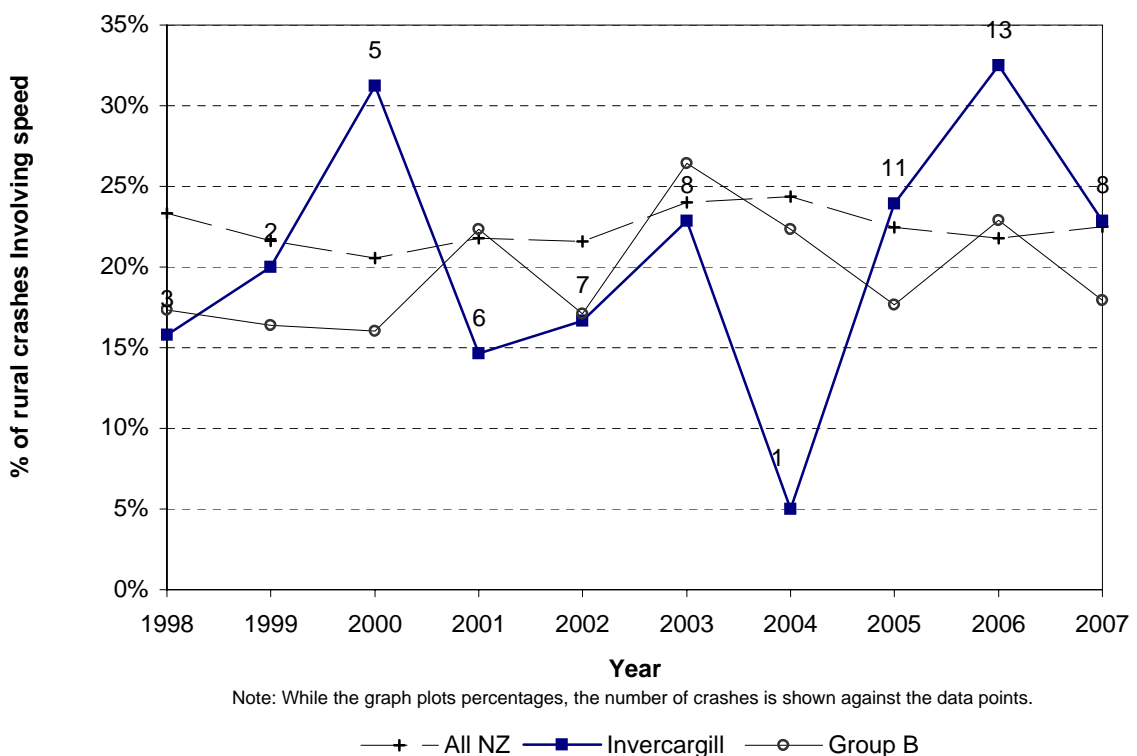
**Figure 5.12 Contributing factor trends  
Invercargill City - rural roads**



**Figure 5.13 Alcohol involved trend  
Invercargill City - rural roads**



**Figure 5.14 Speed involved trend  
Invercargill City - rural roads**

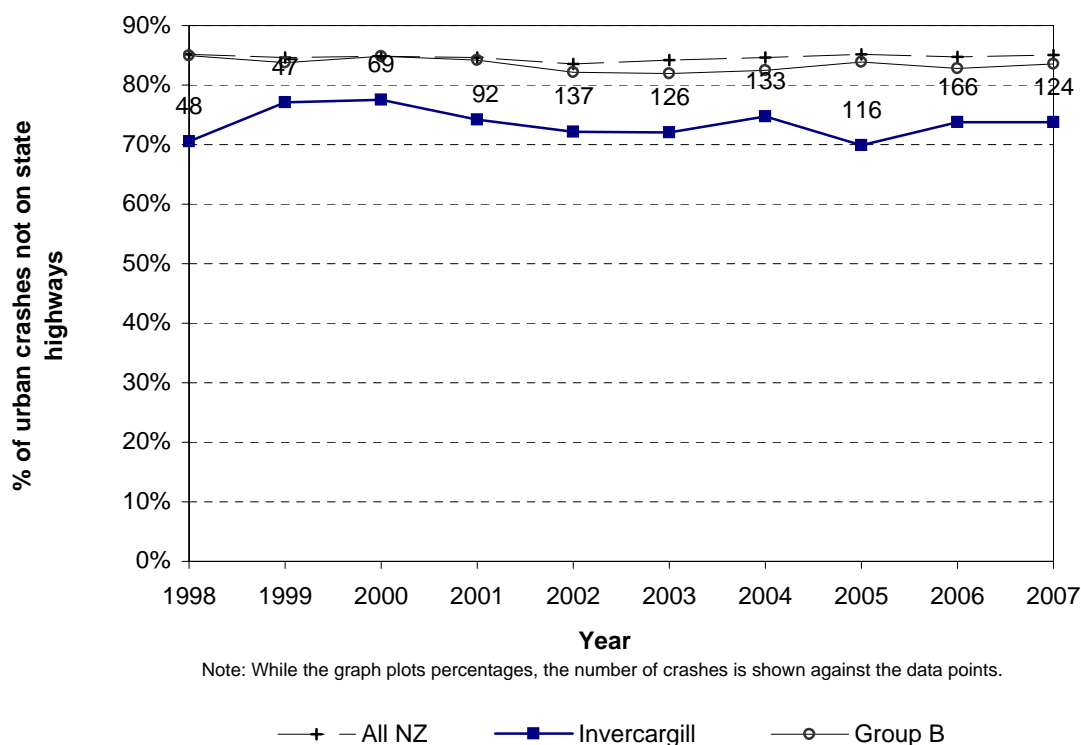




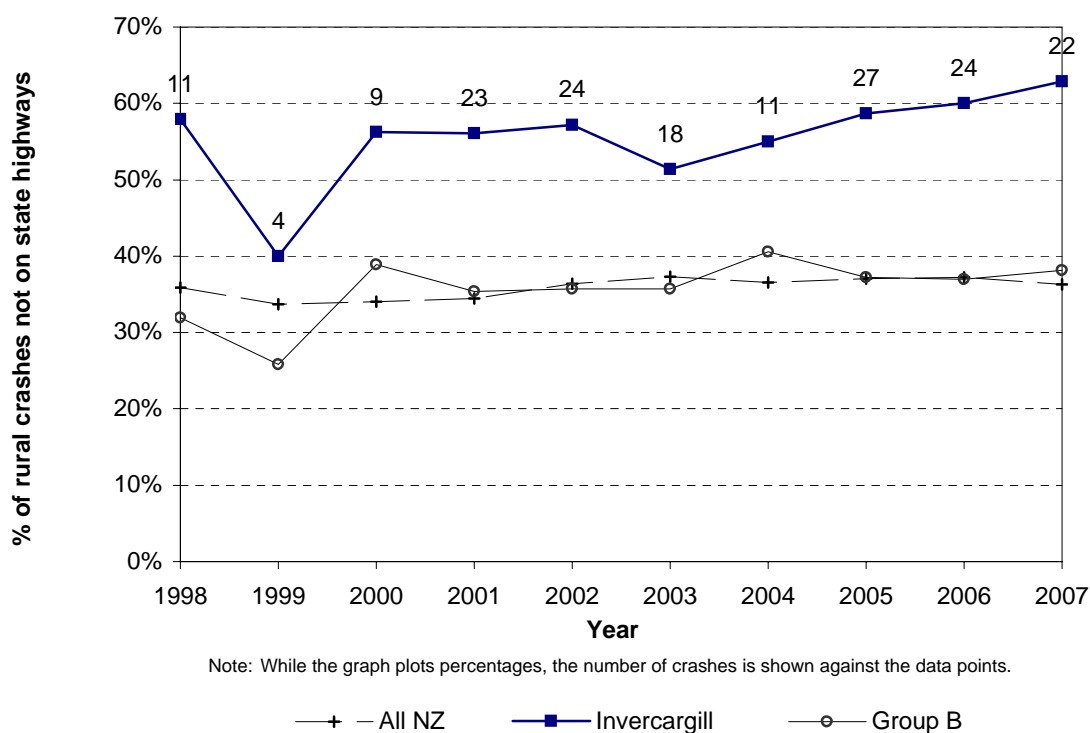
# *Environmental statistics*



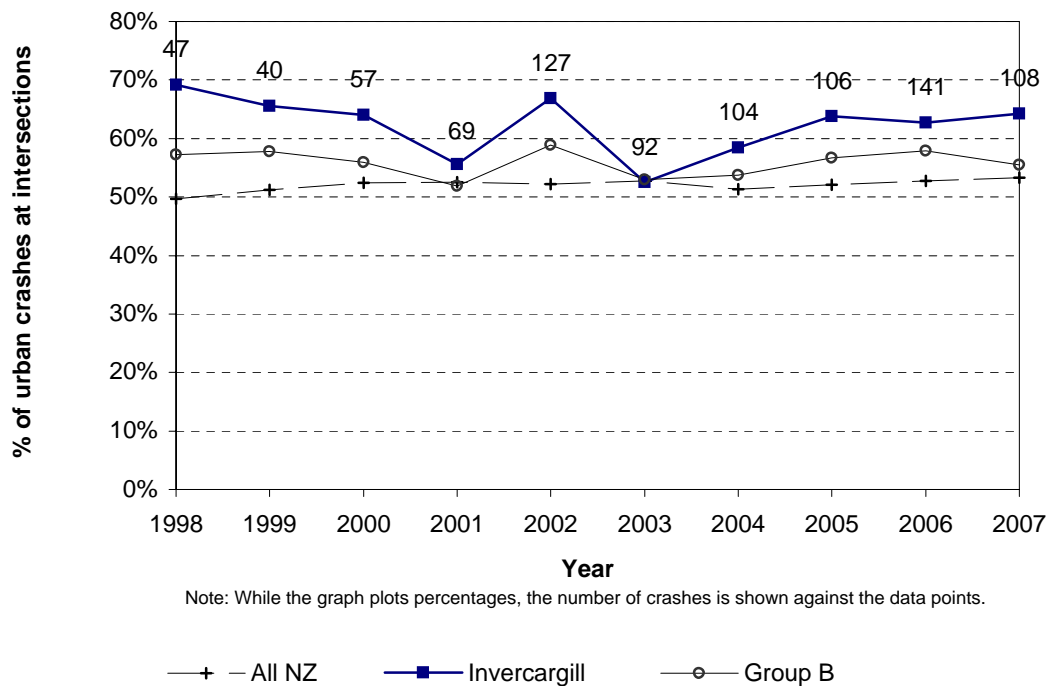
**Figure 6.1 Crashes not on state highways  
Invercargill City - urban roads**



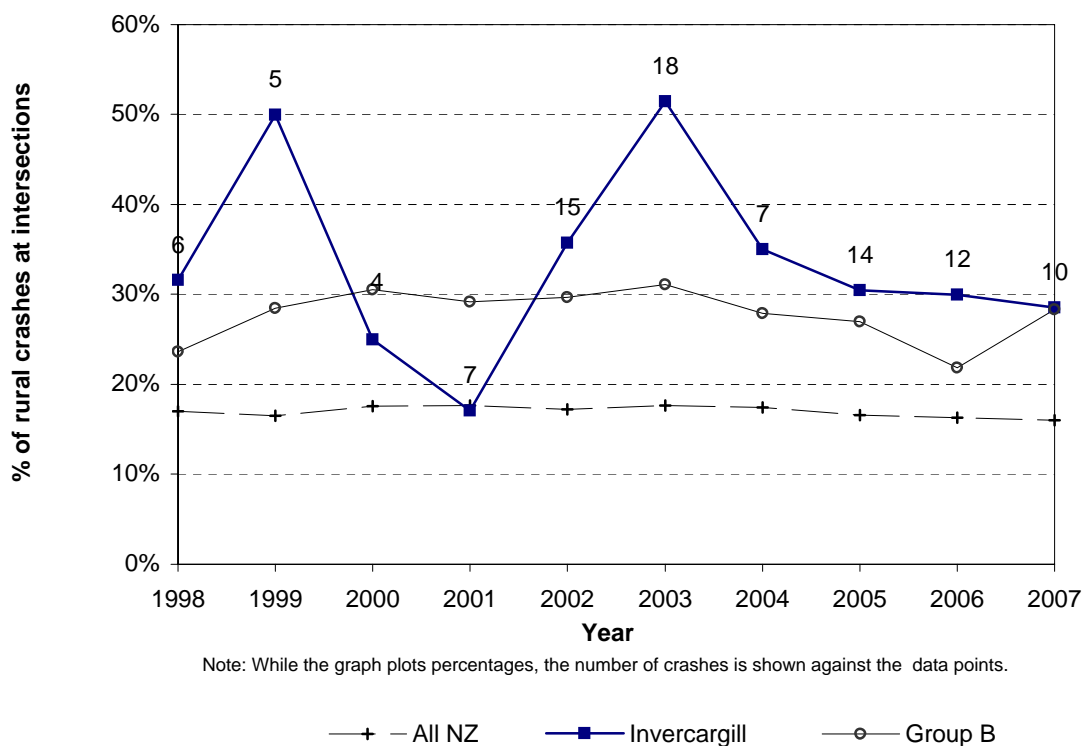
**Figure 6.2 Crashes not on state highways  
Invercargill City - rural roads**



**Figure 6.3 Intersection crashes  
Invercargill City - urban roads**

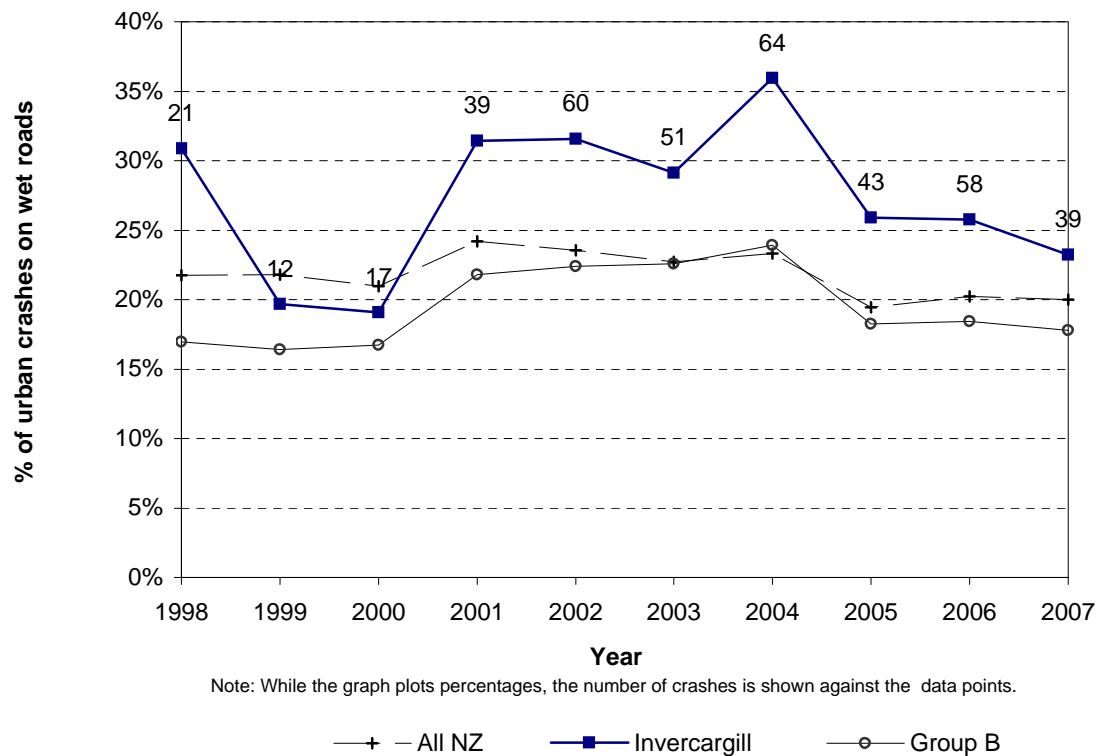


**Figure 6.4 Intersection crashes  
Invercargill City - rural roads**

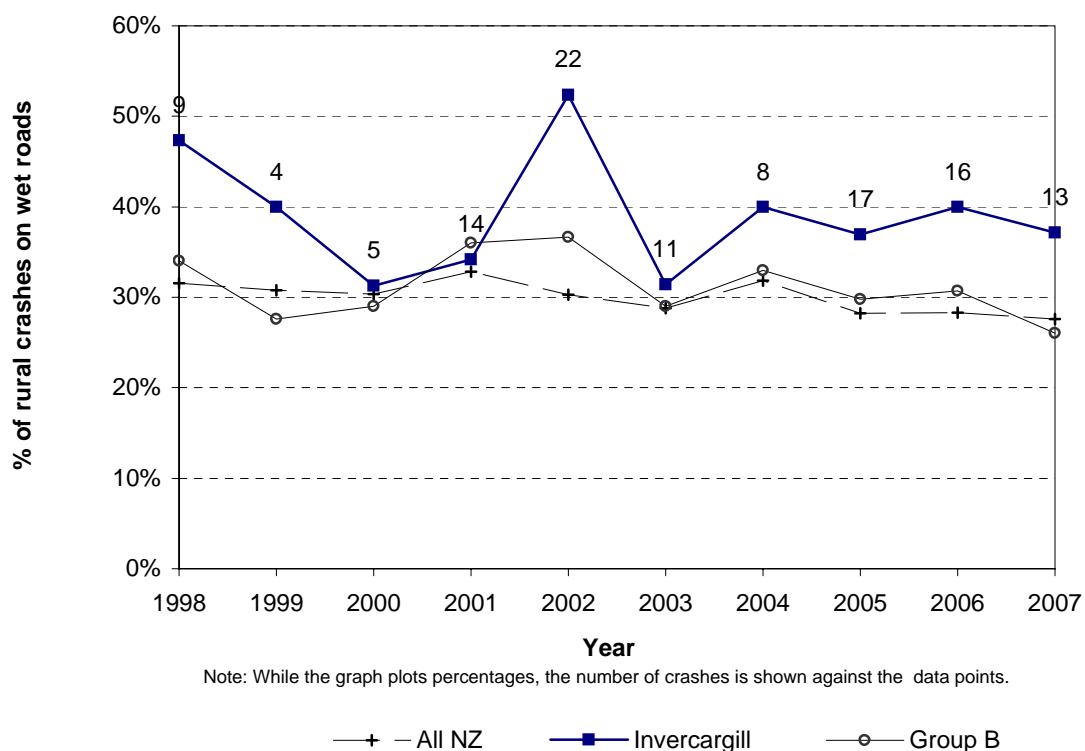




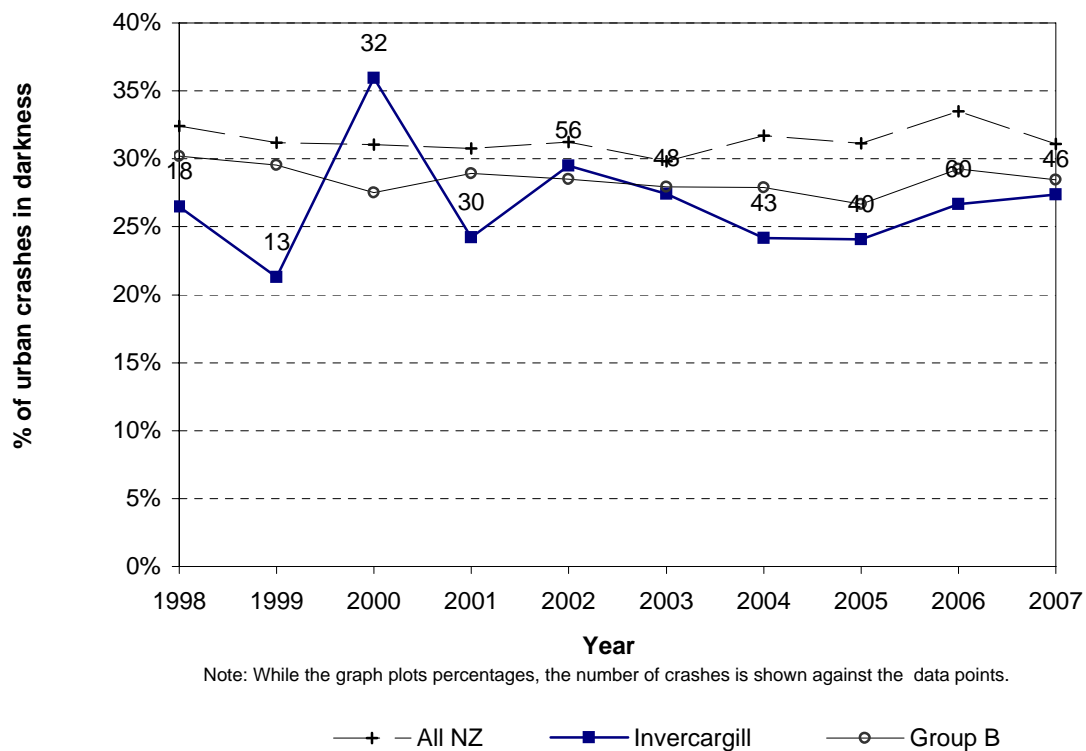
**Figure 6.5 Wet road crashes  
Invercargill City - urban roads**



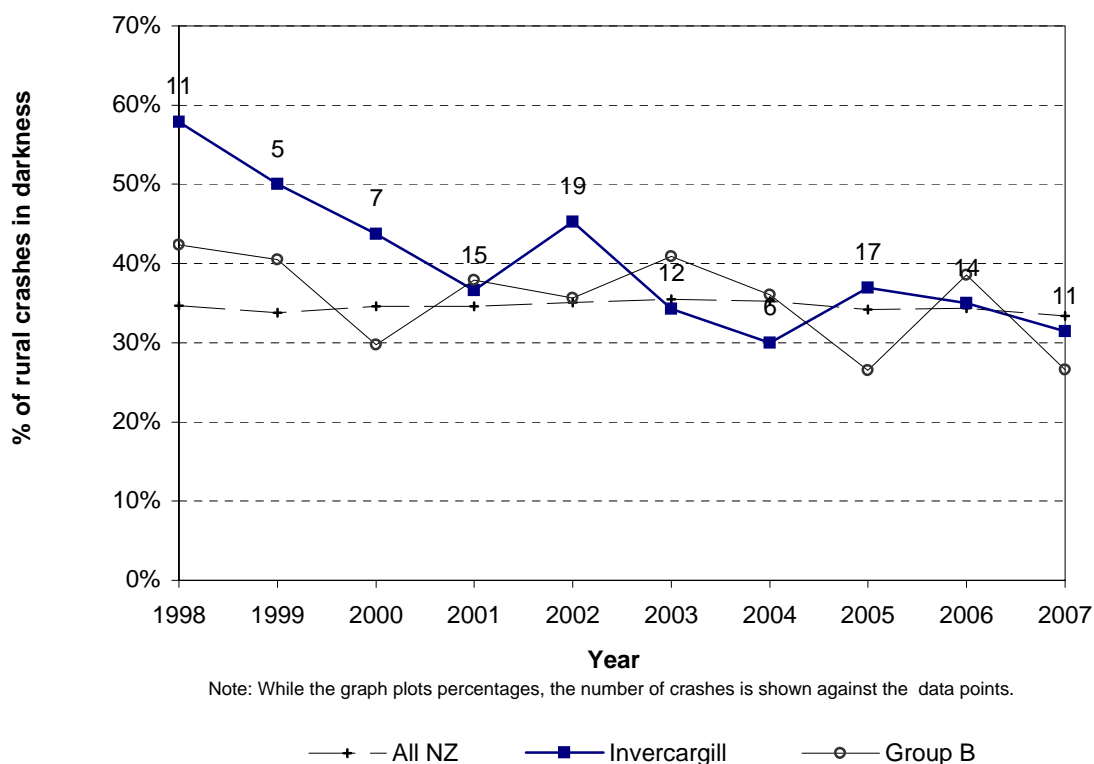
**Figure 6.6 Wet road crashes  
Invercargill City - rural roads**



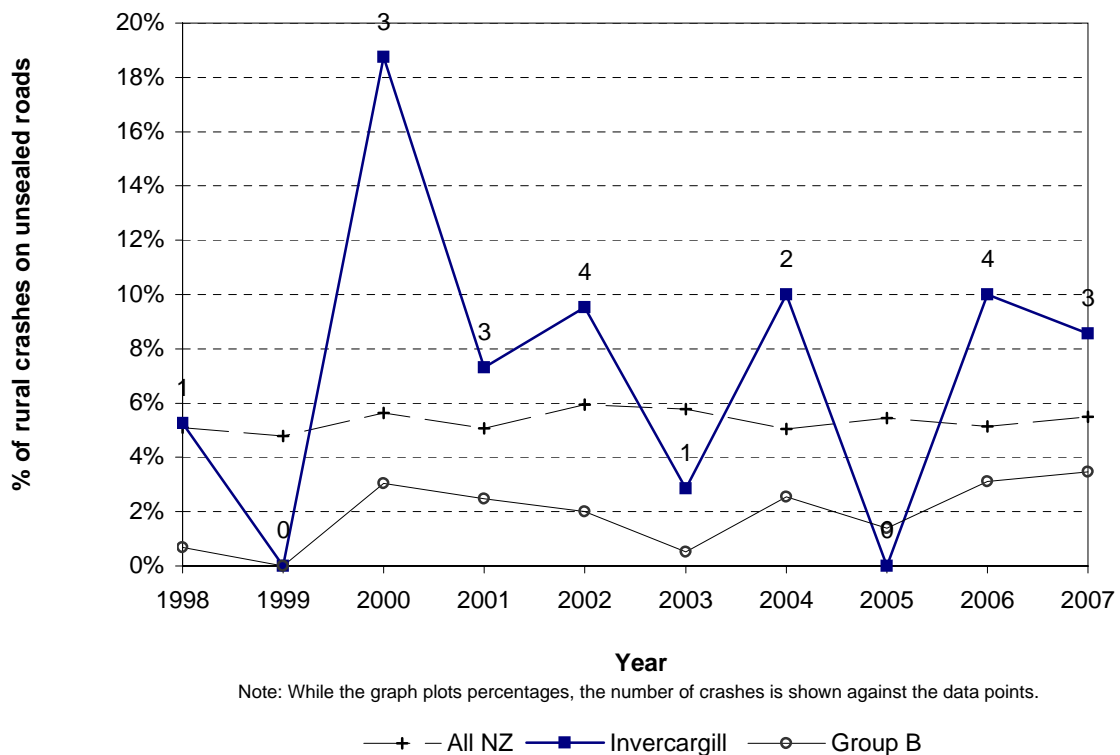
**Figure 6.7 Crashes in darkness  
Invercargill City - urban roads**



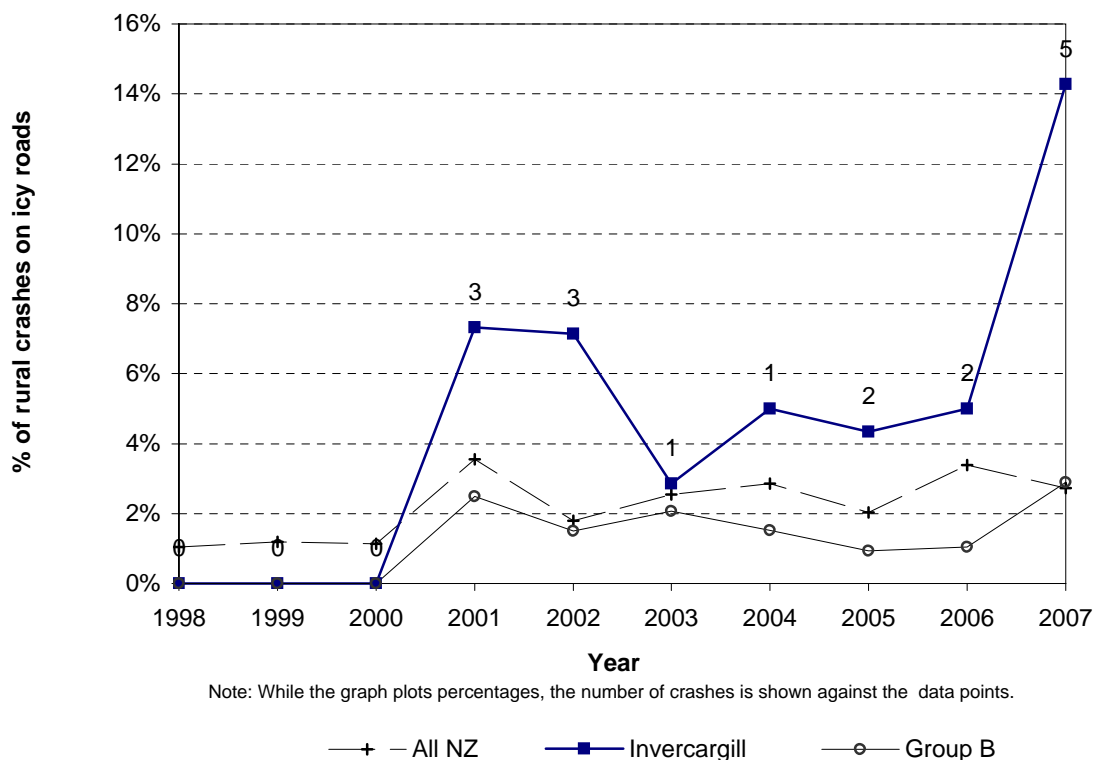
**Figure 6.8 Crashes in darkness  
Invercargill City - rural roads**



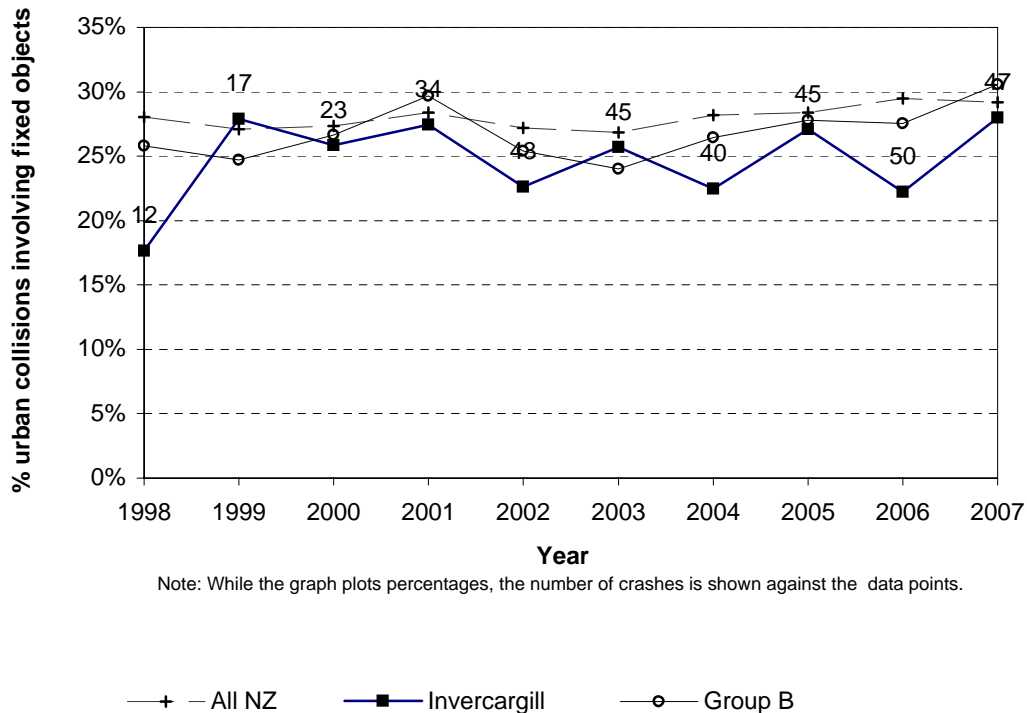
**Figure 6.9 Unsealed road crashes  
Invercargill City - rural roads**



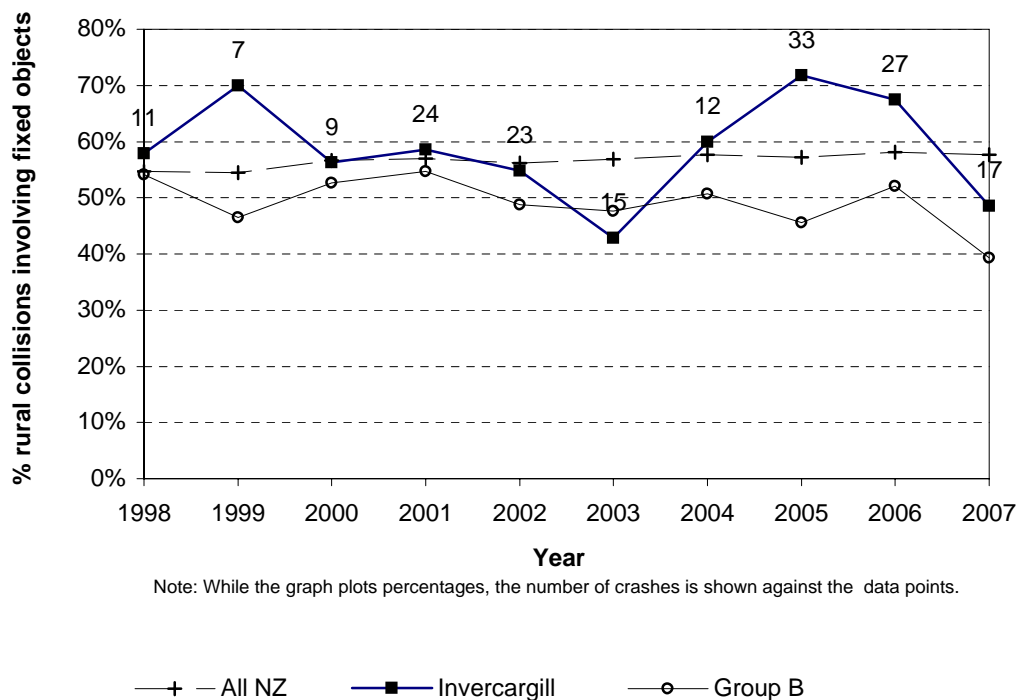
**Figure 6.10 Icy road crashes  
Invercargill City - rural roads**



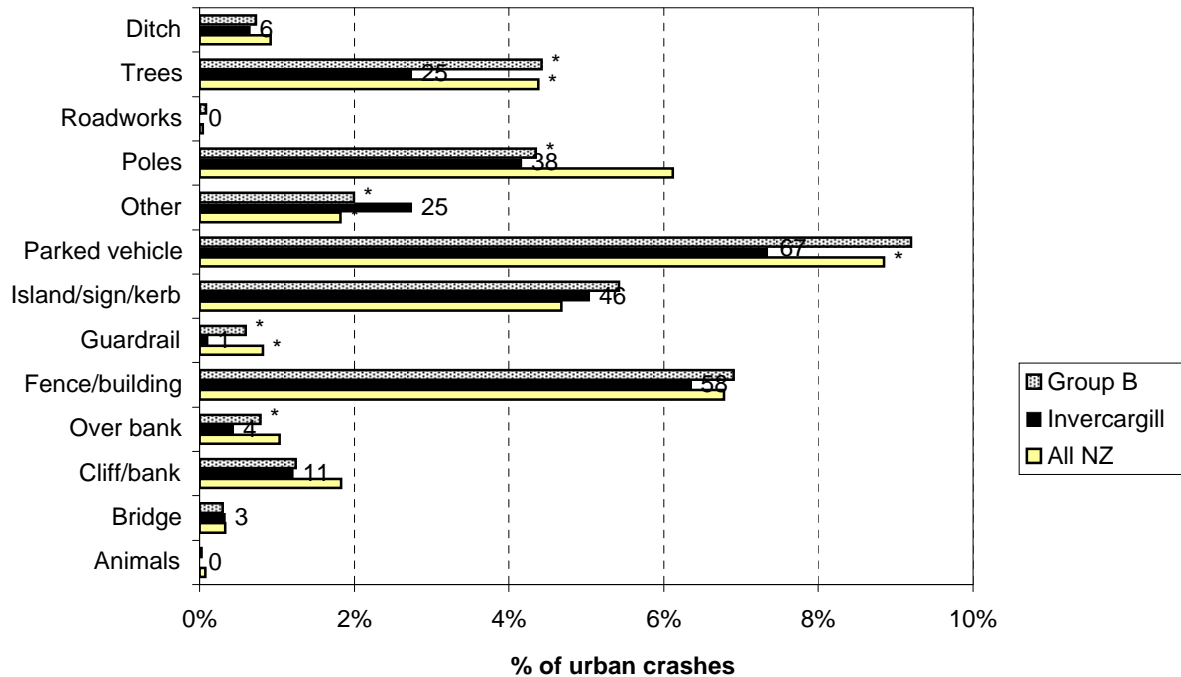
**Figure 6.11 Collisions with objects  
Invercargill City - urban roads**



**Figure 6.12 Collisions with objects  
Invercargill City - rural roads**

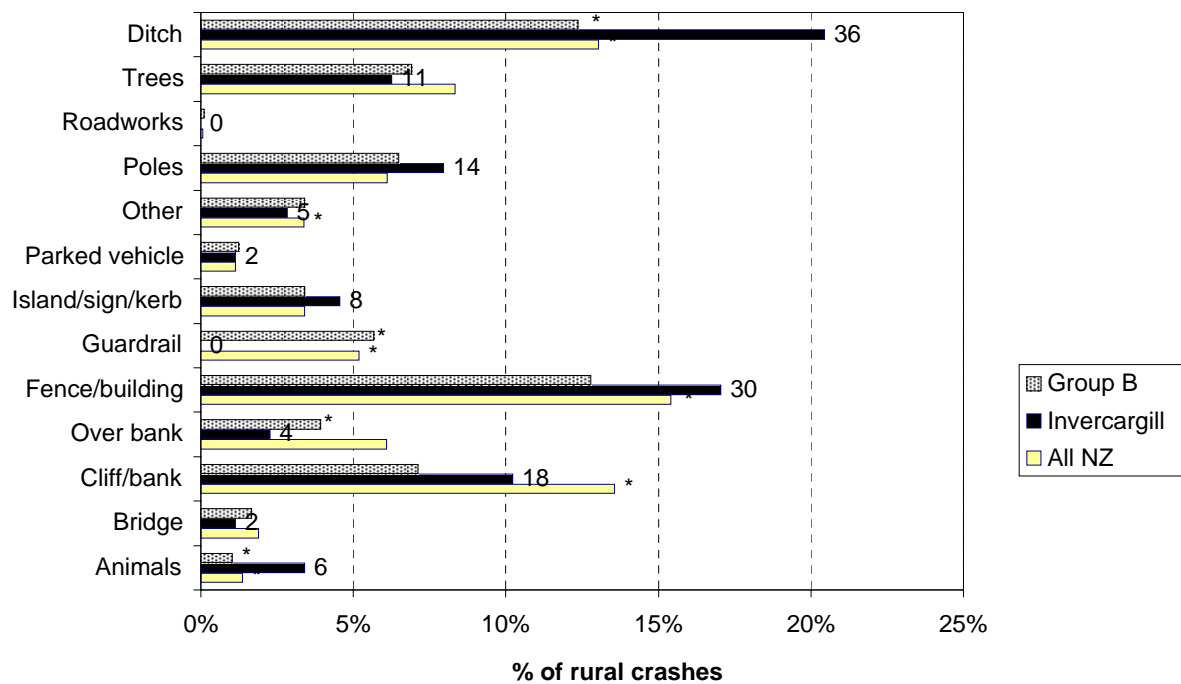


**Figure 6.13 Objects struck - urban  
Invercargill City (2003-2007)**



Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 6.14 Objects struck - rural  
Invercargill City (2003-2007)**



Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions



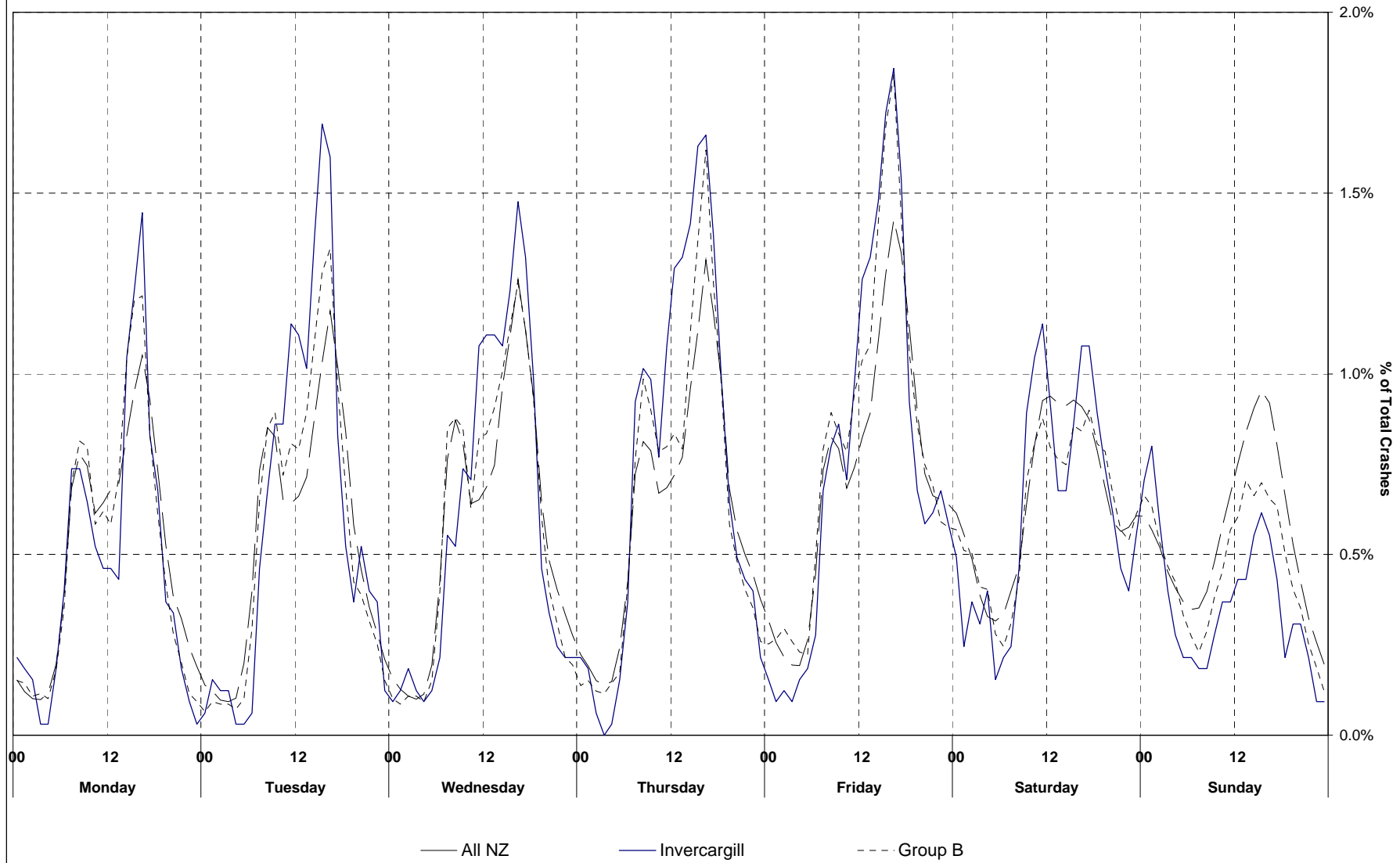


# *Date and time statistics*

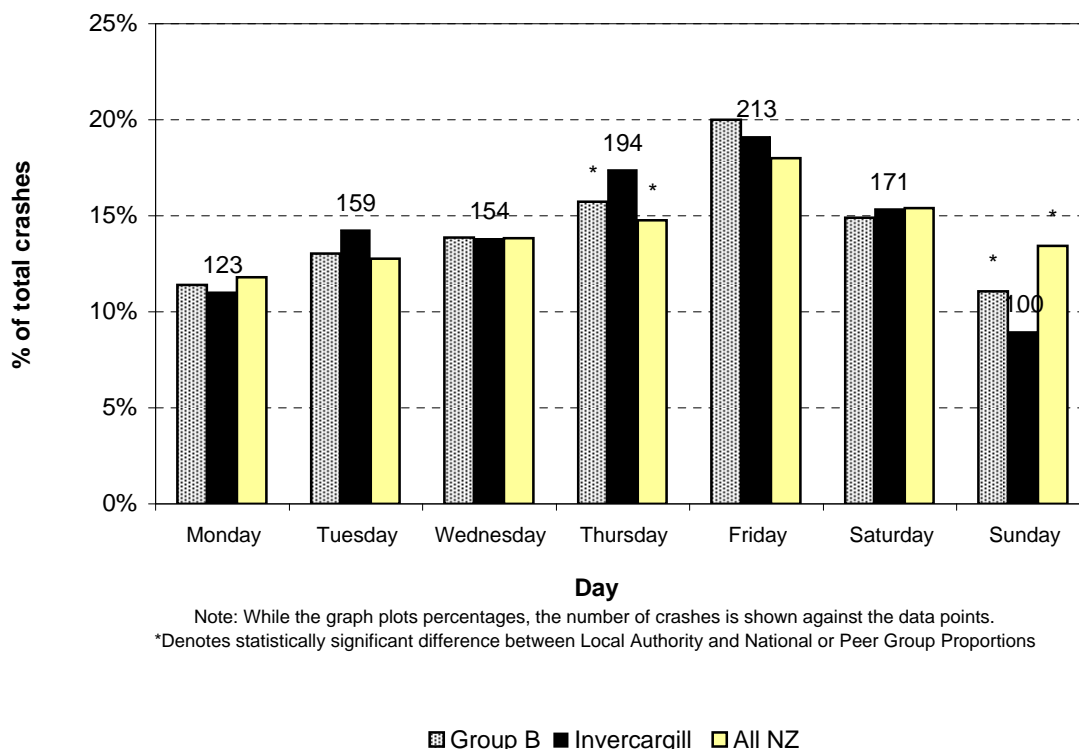




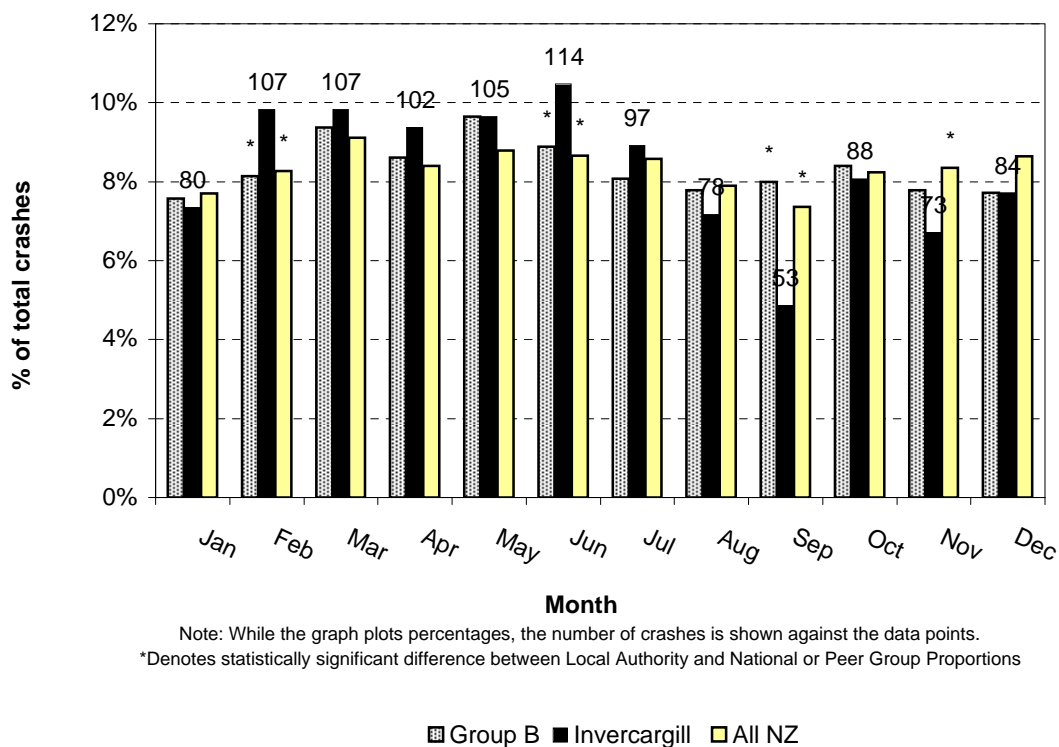
**Figure 7.1 Time pattern over average week  
Invercargill City (2003-2007)**



**Figure 7.2 Day of week (6 a.m. to 6 a.m.)  
Invercargill City (2003-2007)**



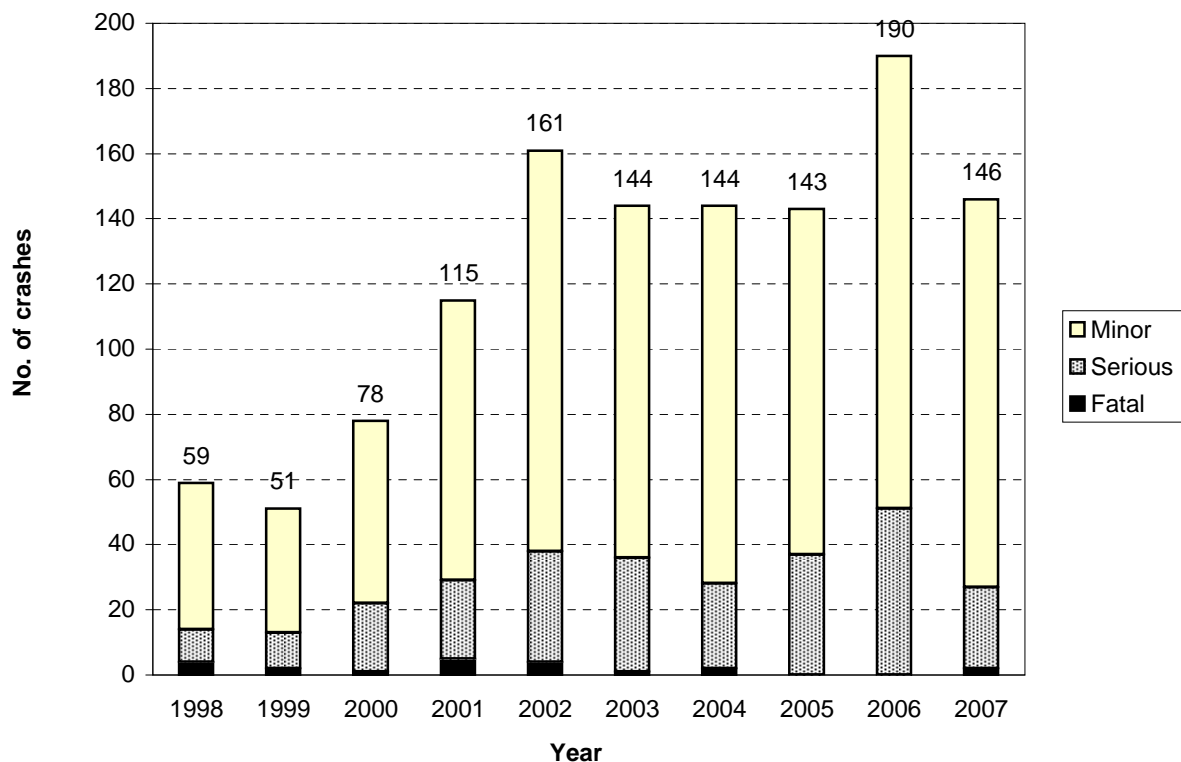
**Figure 7.3 Month of year  
Invercargill City (2003-2007)**



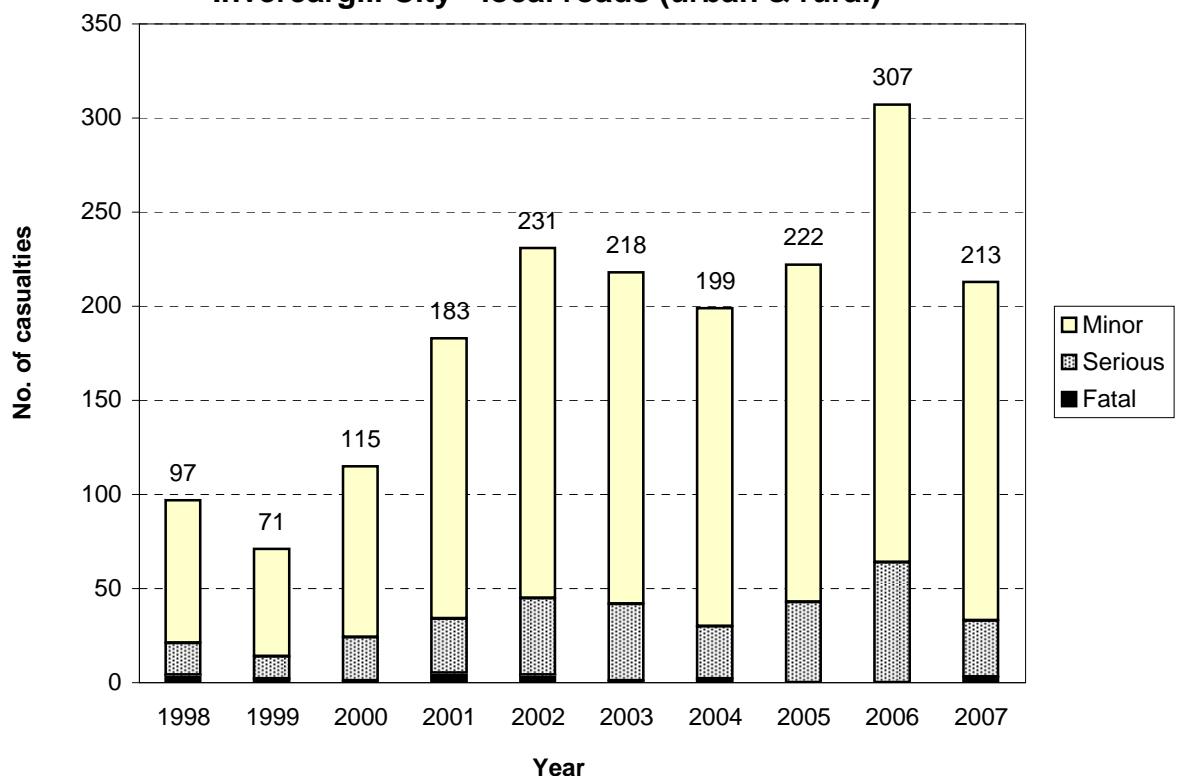
# *Local road statistics*



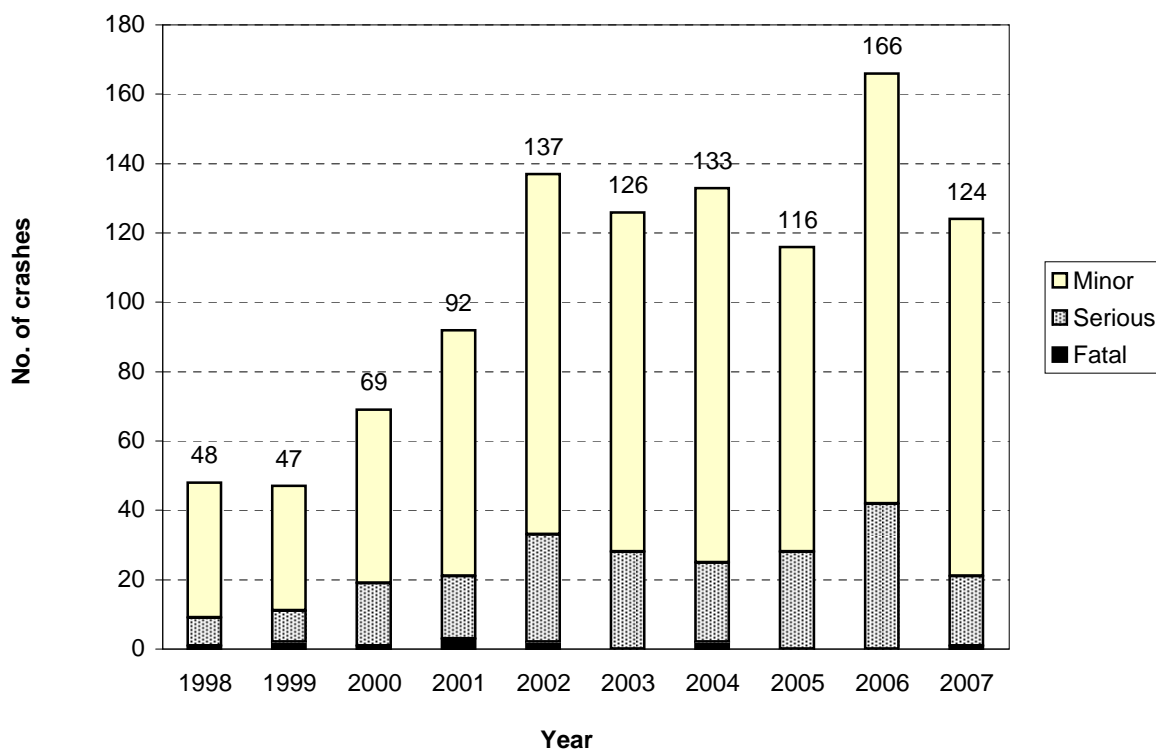
**Figure 8.1 Number of injury crashes**  
Invercargill City - local roads (urban & rural)



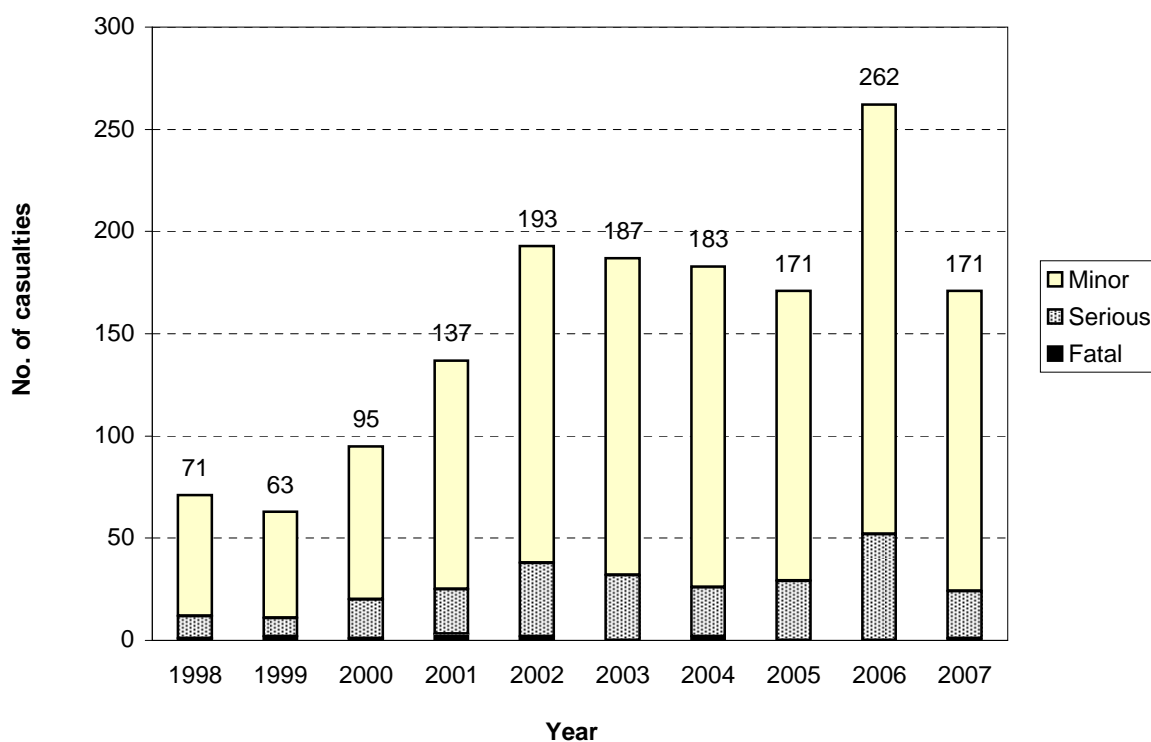
**Figure 8.2 Number of casualties**  
Invercargill City - local roads (urban & rural)



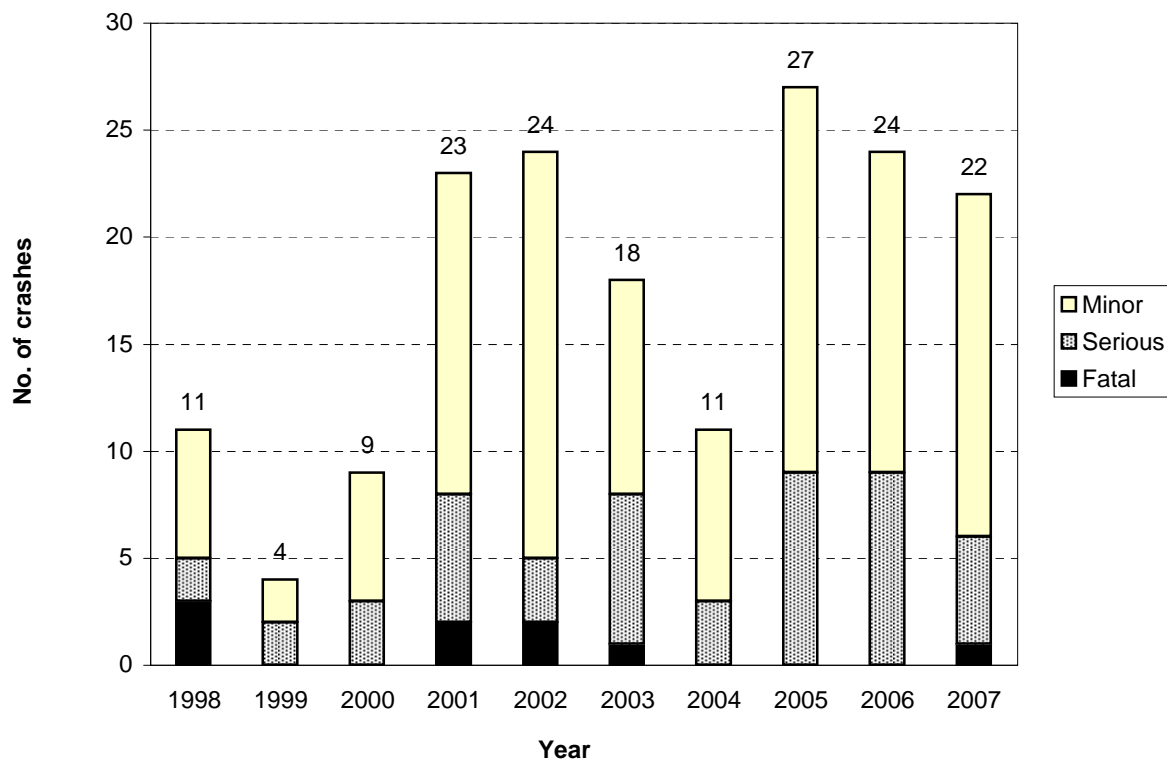
**Figure 8.3 Number of injury crashes  
Invercargill City - urban local roads**



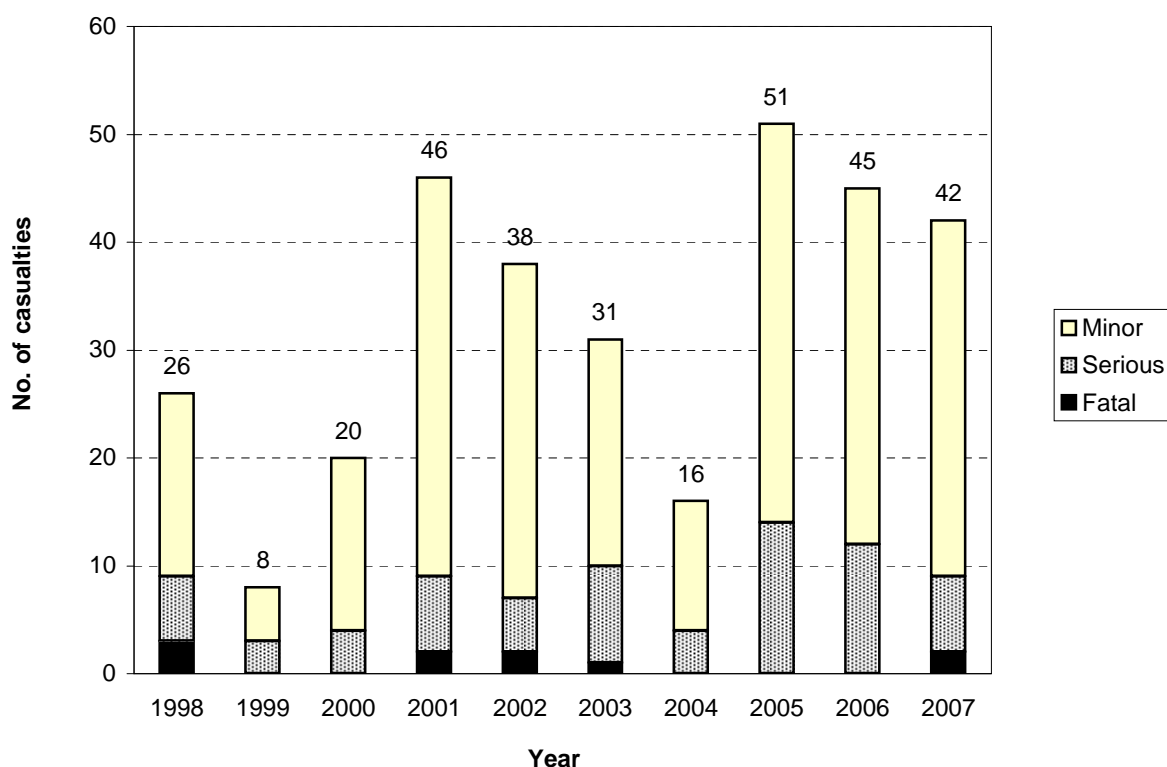
**Figure 8.4 Number of casualties  
Invercargill City - urban local roads**



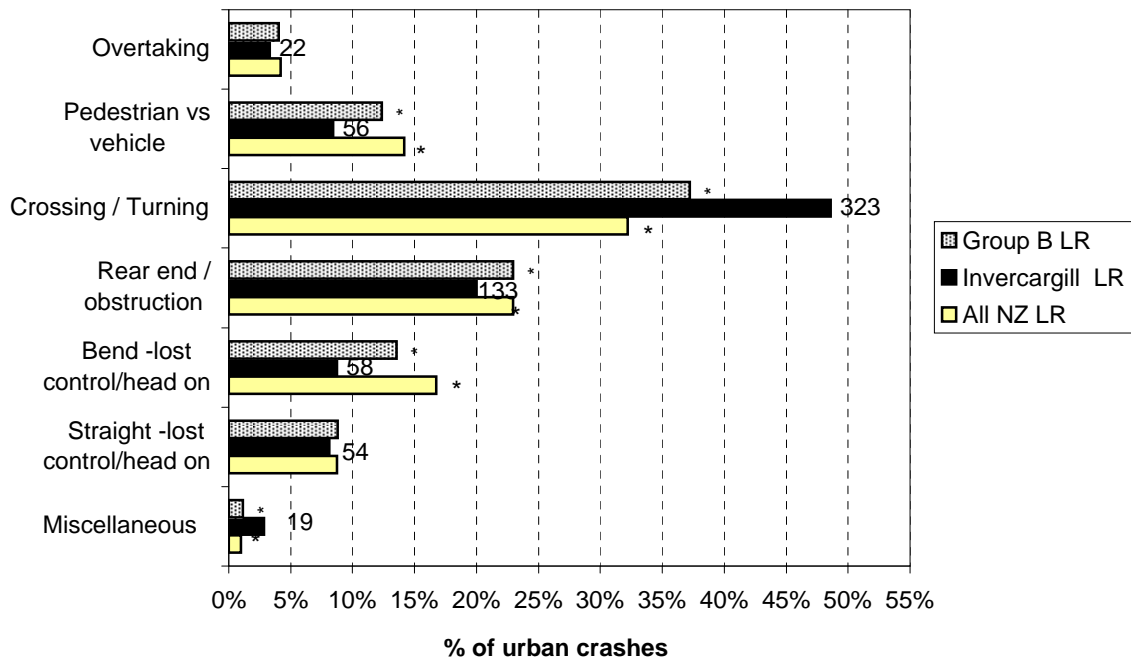
**Figure 8.5 Number of injury crashes  
Invercargill City - rural local roads**



**Figure 8.6 Number of casualties  
Invercargill City - rural local roads**

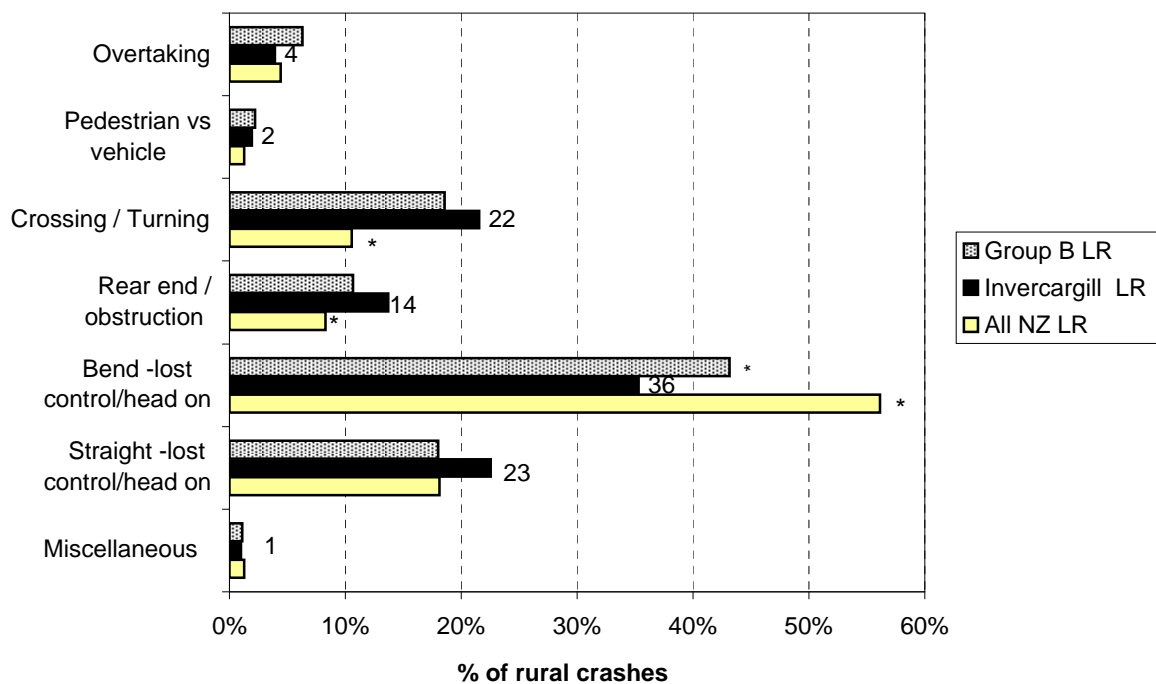


**Figure 8.7 Crash movement type - urban  
Invercargill City local roads (2003-2007)**



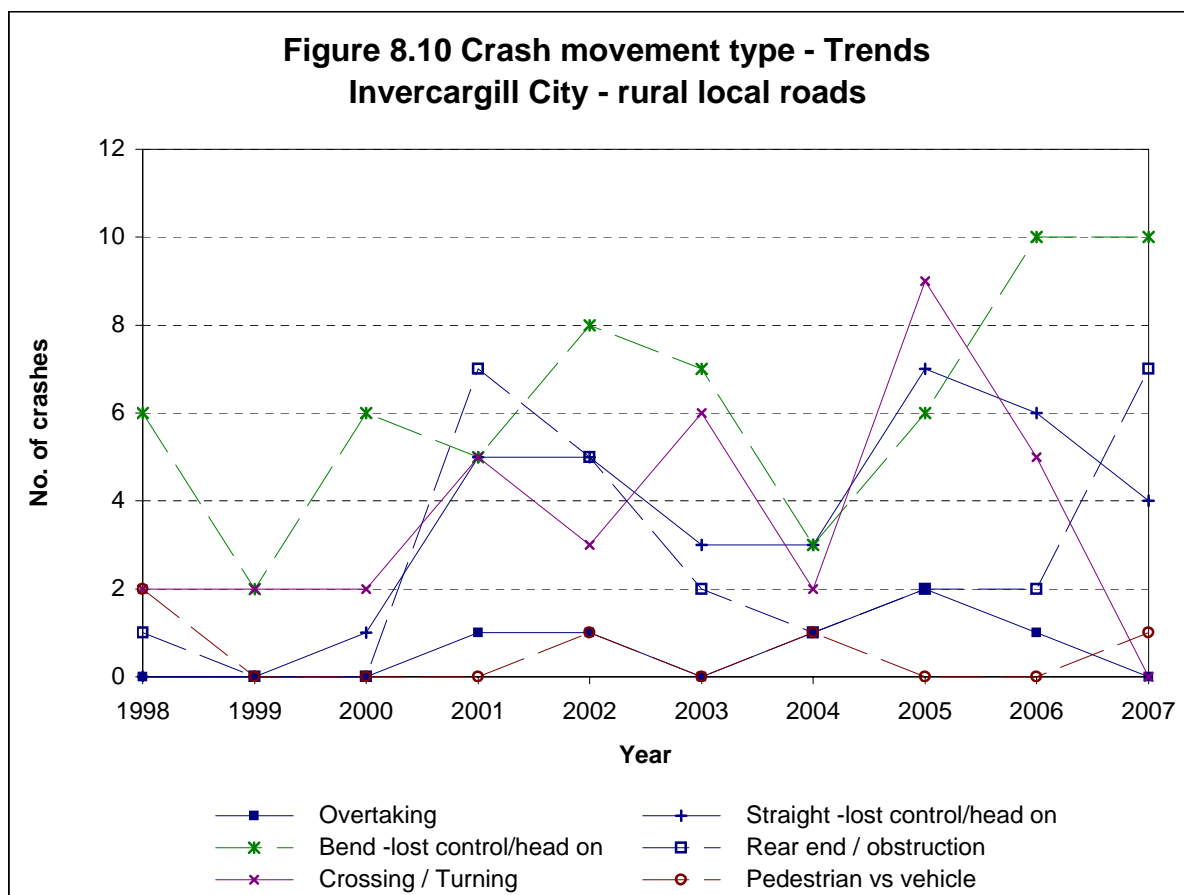
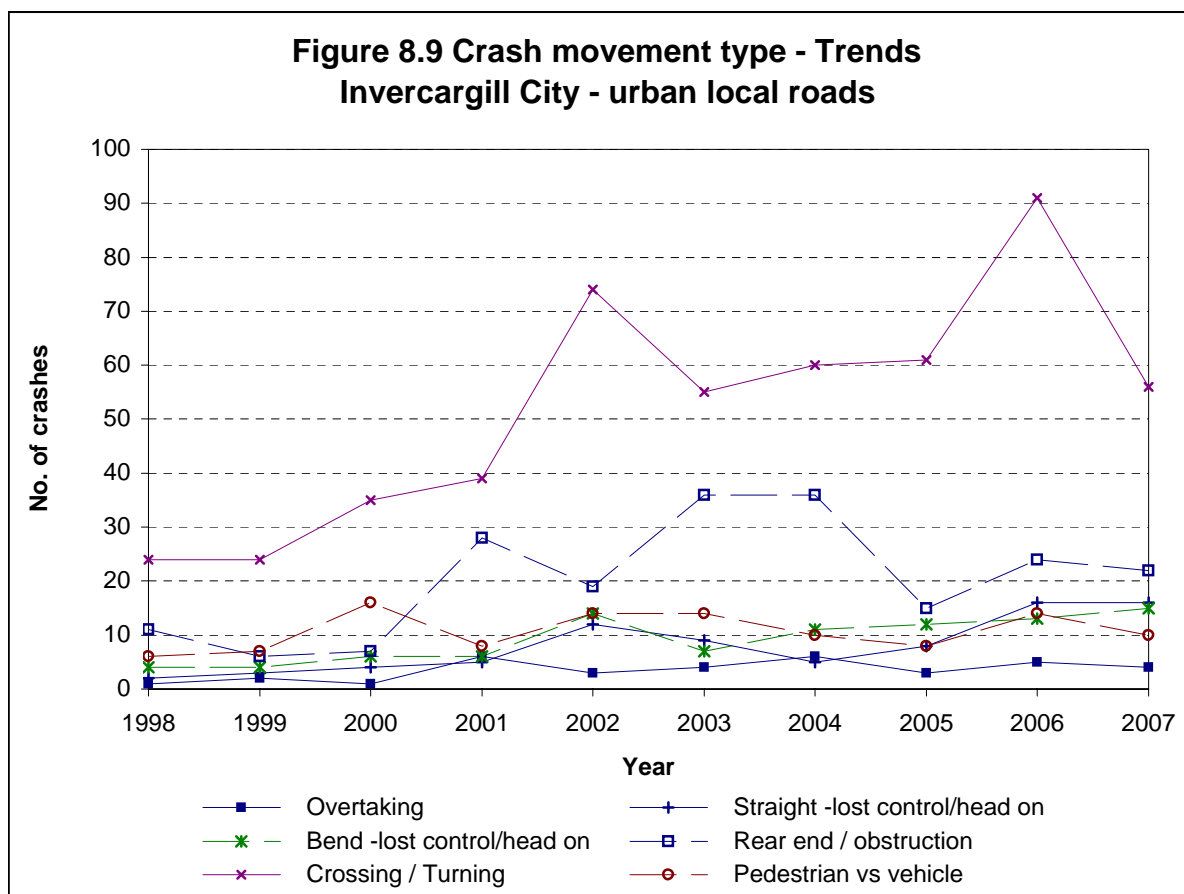
Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

**Figure 8.8 Crash movement type - rural  
Invercargill City local roads (2003-2007)**

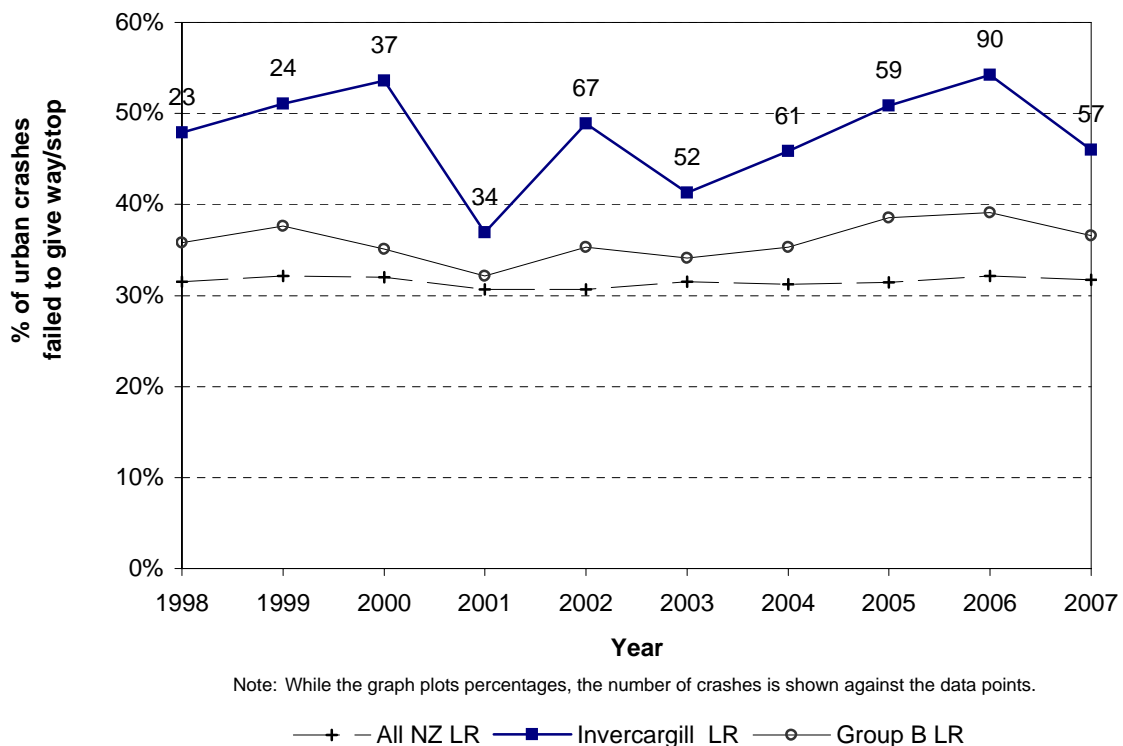


Note: While the graph plots percentages, the number of crashes is shown against the data points.  
\*Denotes statistically significant difference between Local Authority and National or Peer Group Proportions

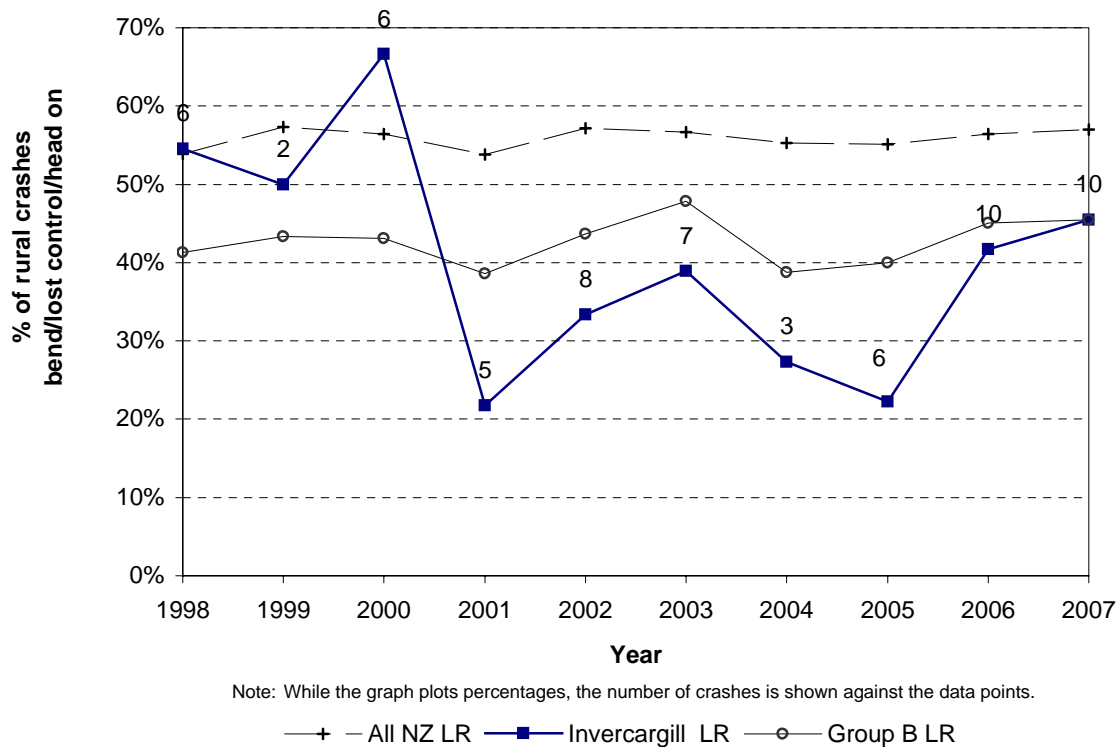




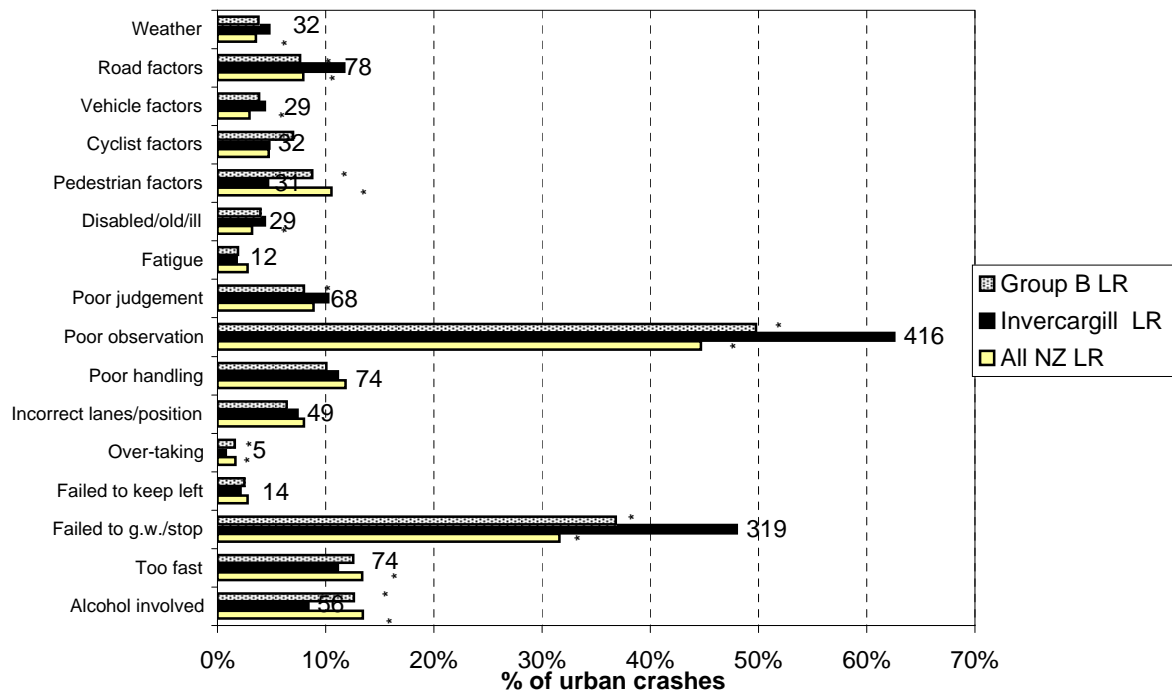
**Figure 8.11 Failed to give way/stop  
Invercargill City - urban local roads**



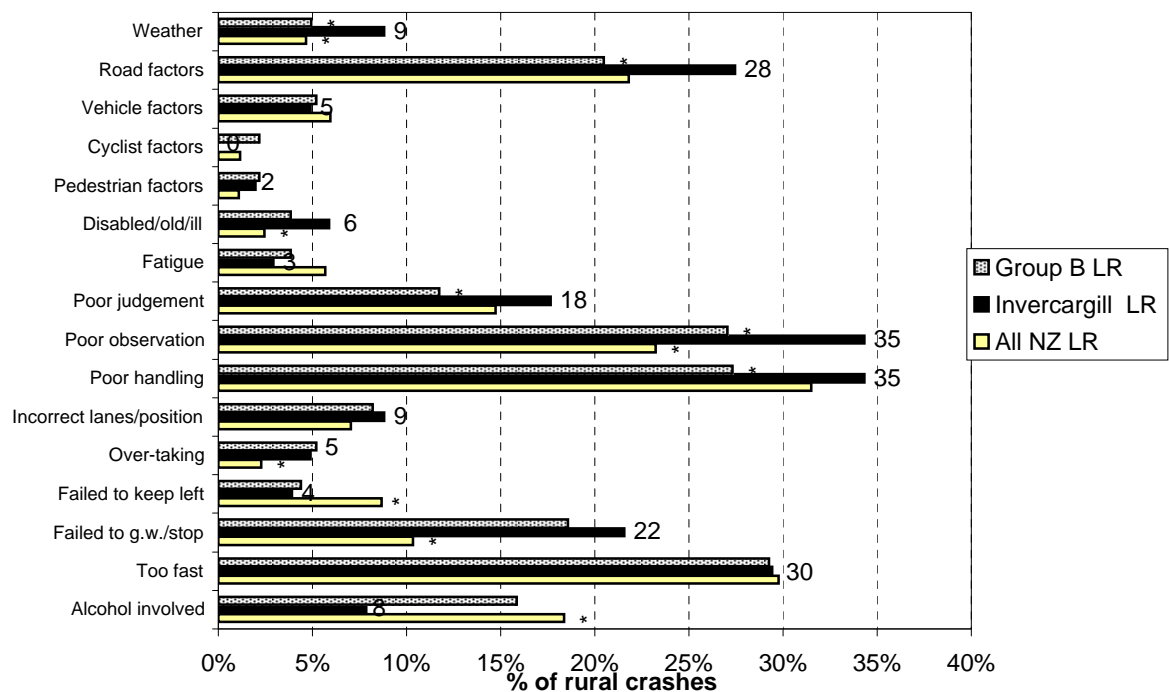
**Figure 8.12 Bend - lost control / head - on  
Invercargill City - rural local roads**



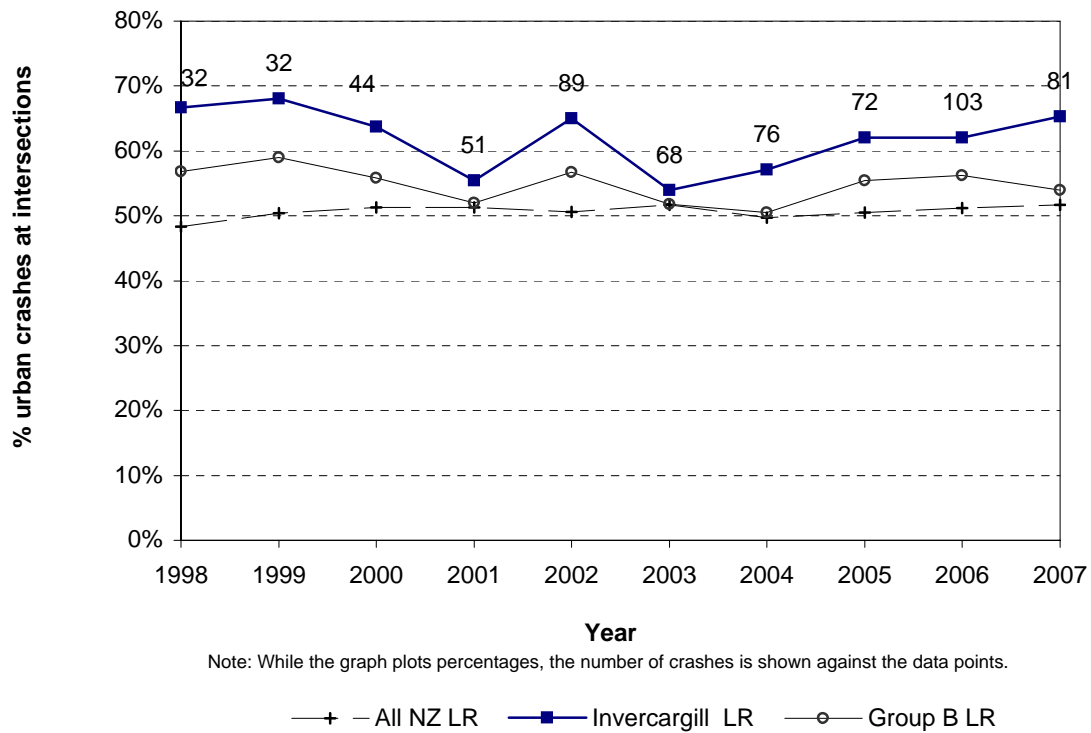
**Figure 8.13 Contributing factors - urban  
Invercargill City local roads (2003-2007)**



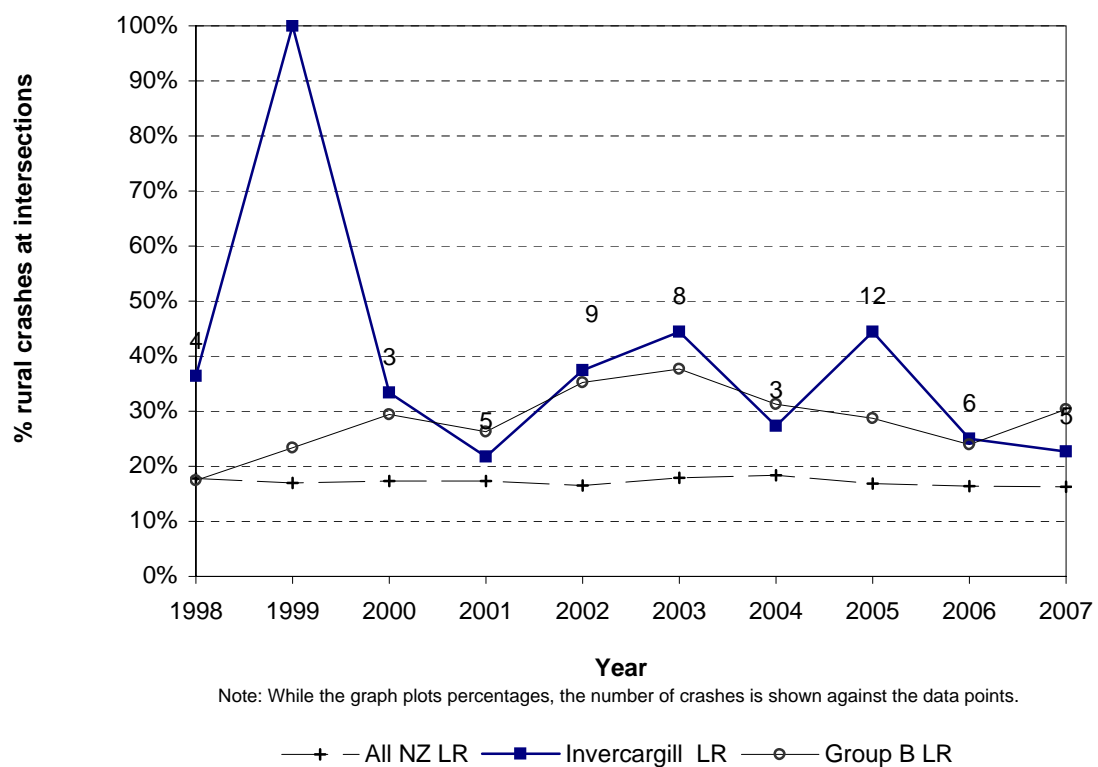
**Figure 8.14 Contributing factors - rural  
Invercargill City local roads (2003-2007)**



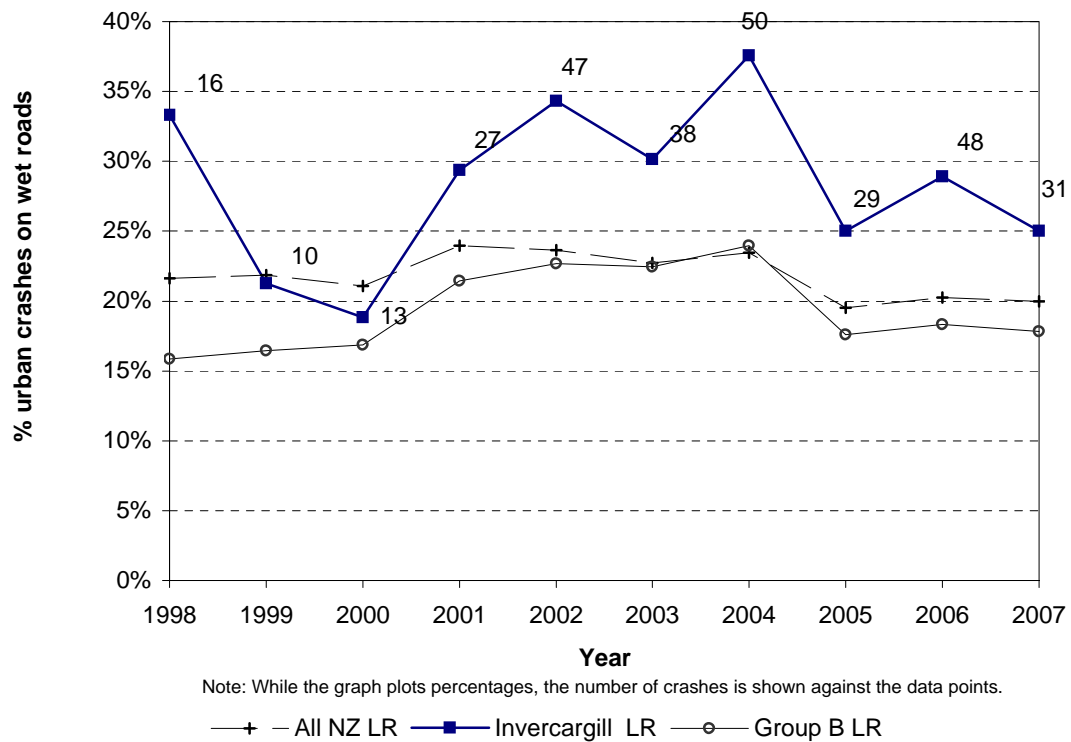
**Figure 8.15 Intersection crashes  
Invercargill City - urban local roads**



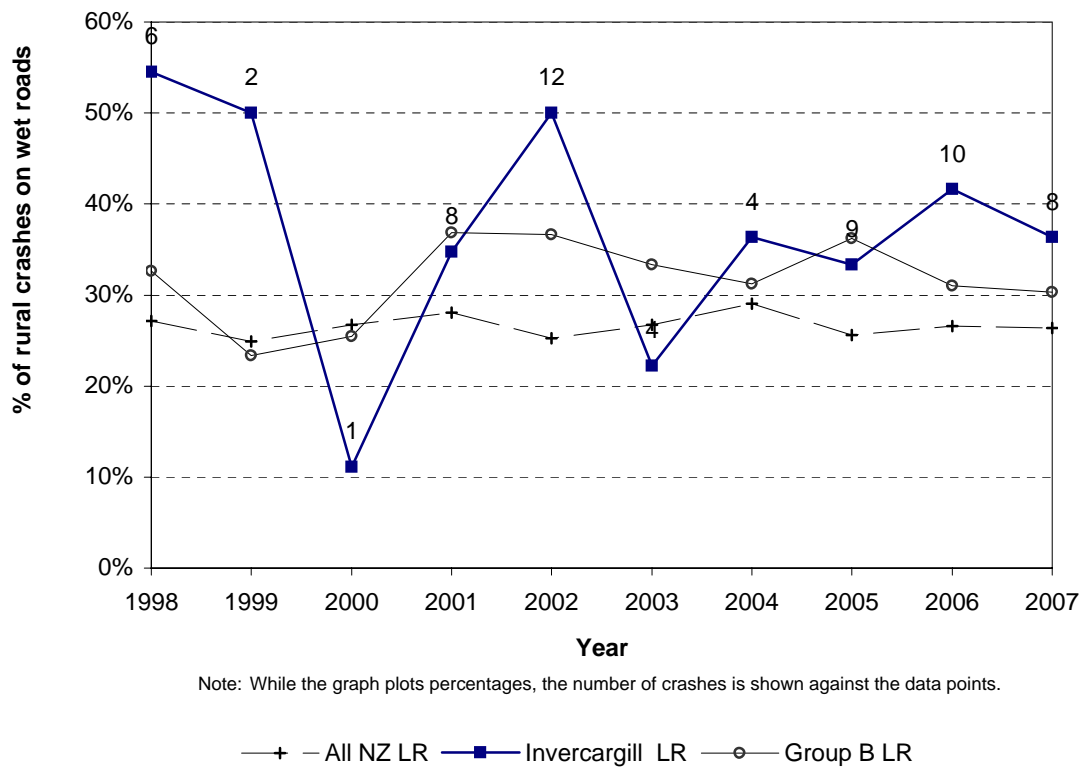
**Figure 8.16 Intersection crashes  
Invercargill City - rural local roads**



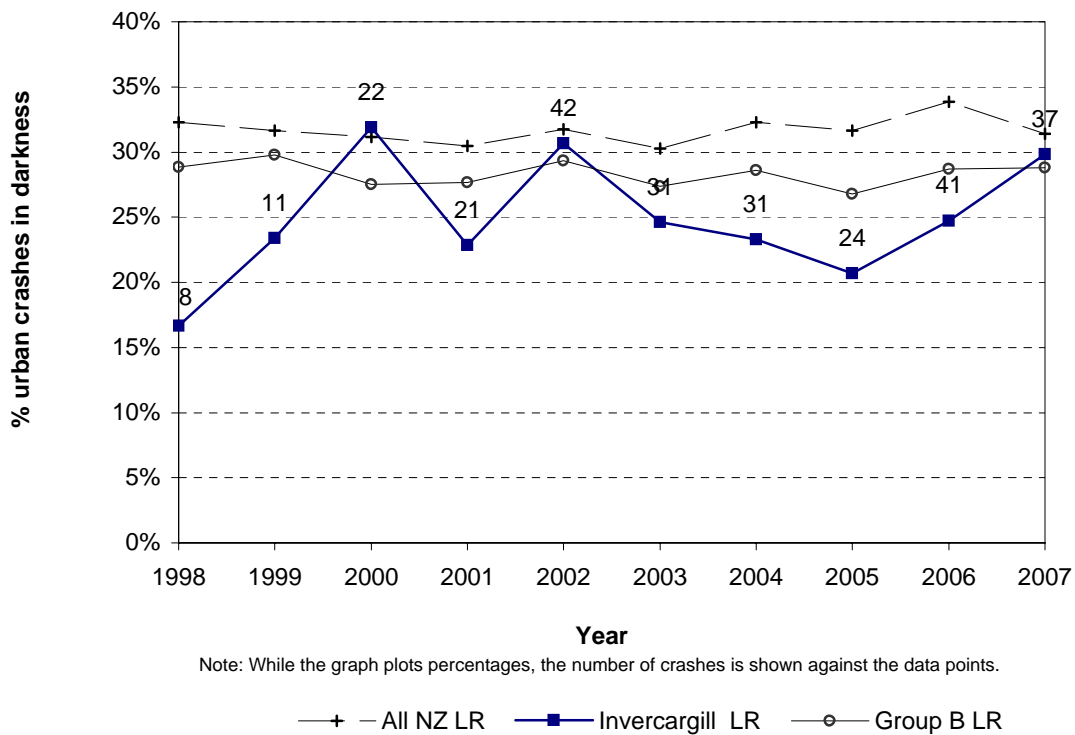
**Figure 8.17 Wet road crashes**  
**Invercargill City - urban local roads**



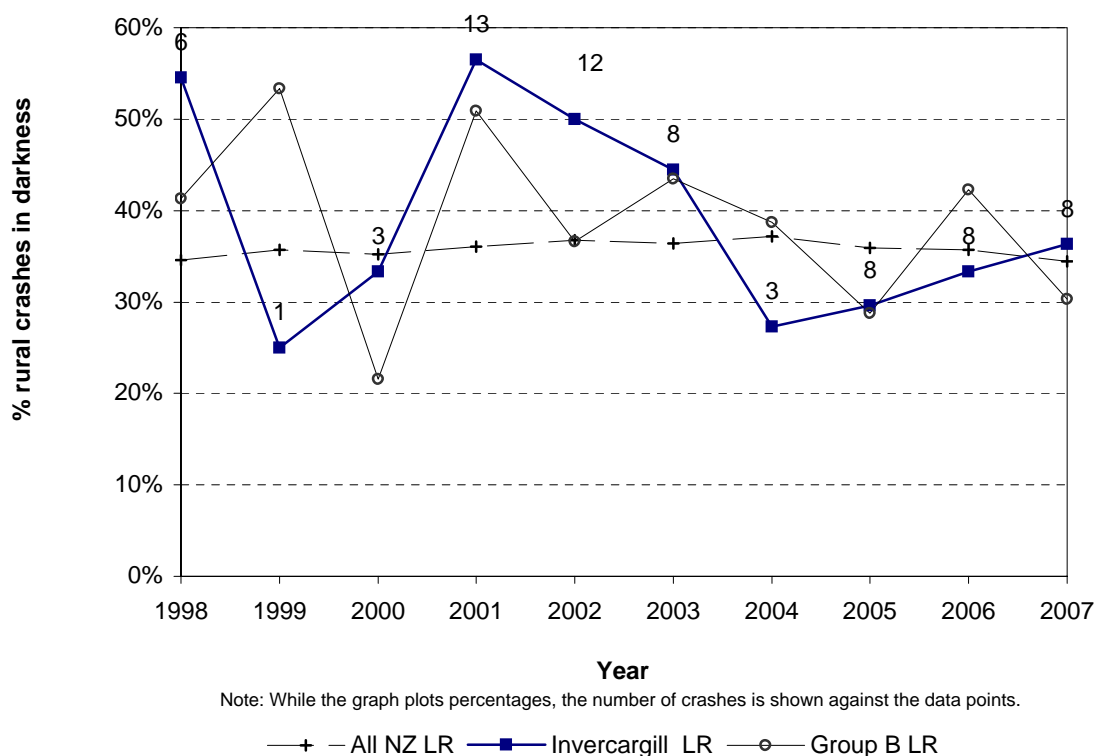
**Figure 8.18 Wet road crashes**  
**Invercargill City - rural local roads**



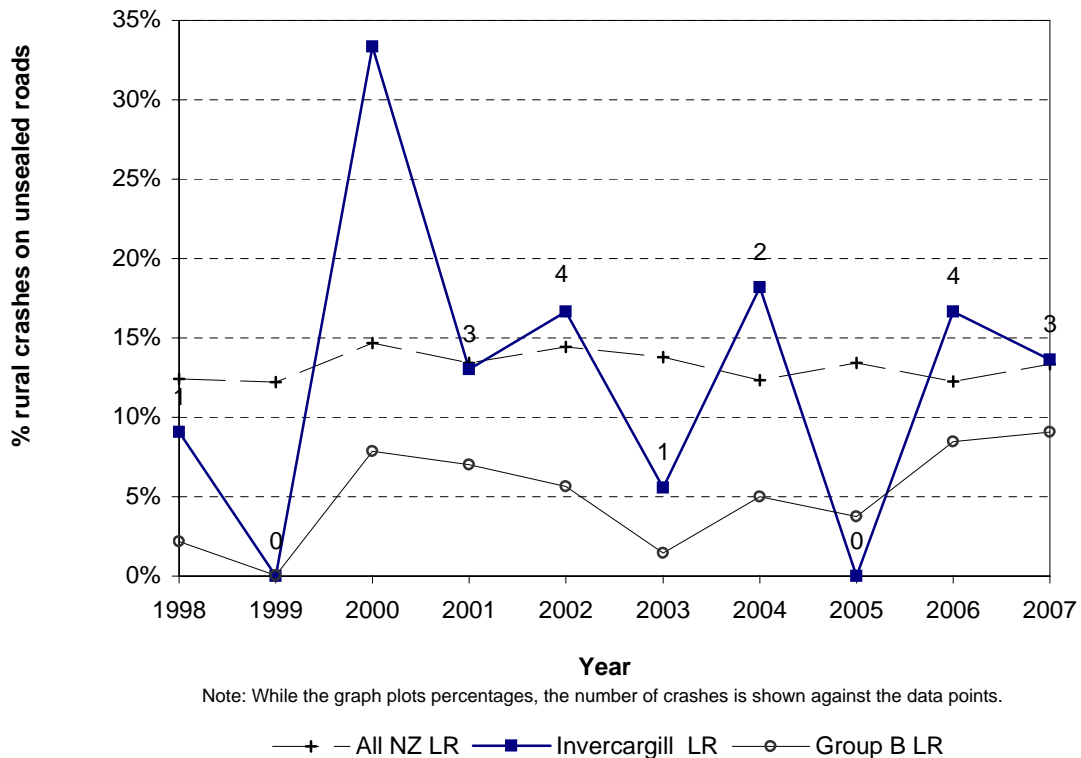
**Figure 8.19 Crashes in darkness  
Invercargill City - urban local roads**



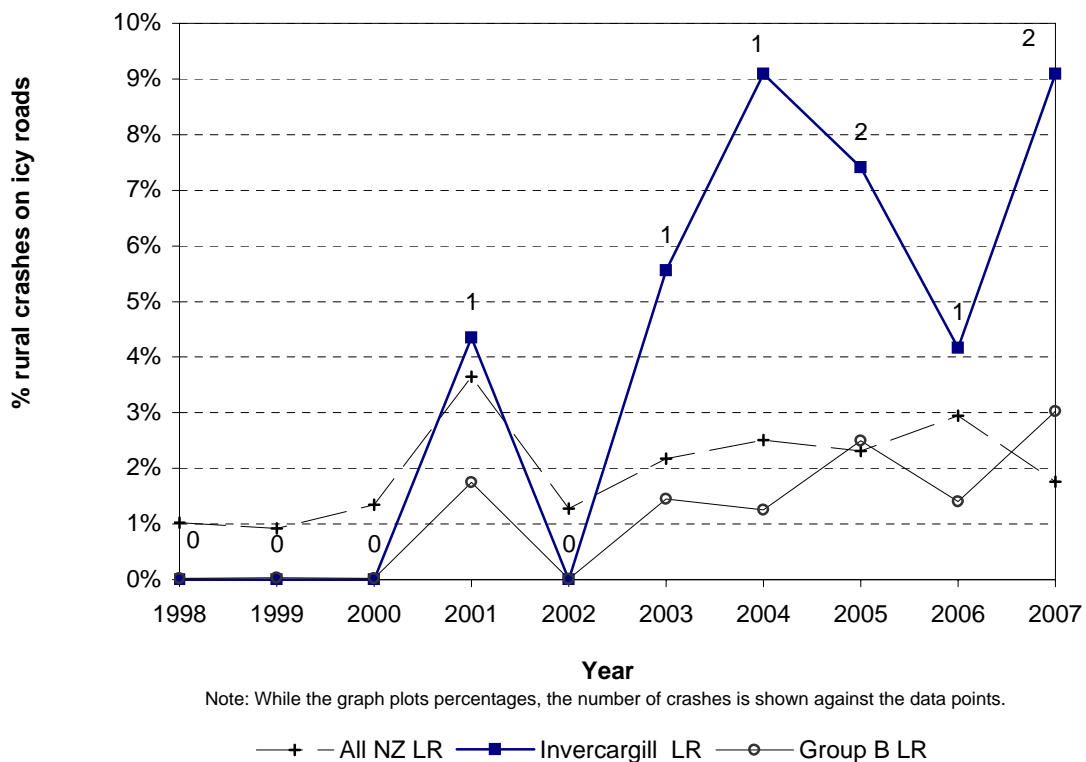
**Figure 8.20 Crashes in darkness  
Invercargill City - rural local roads**



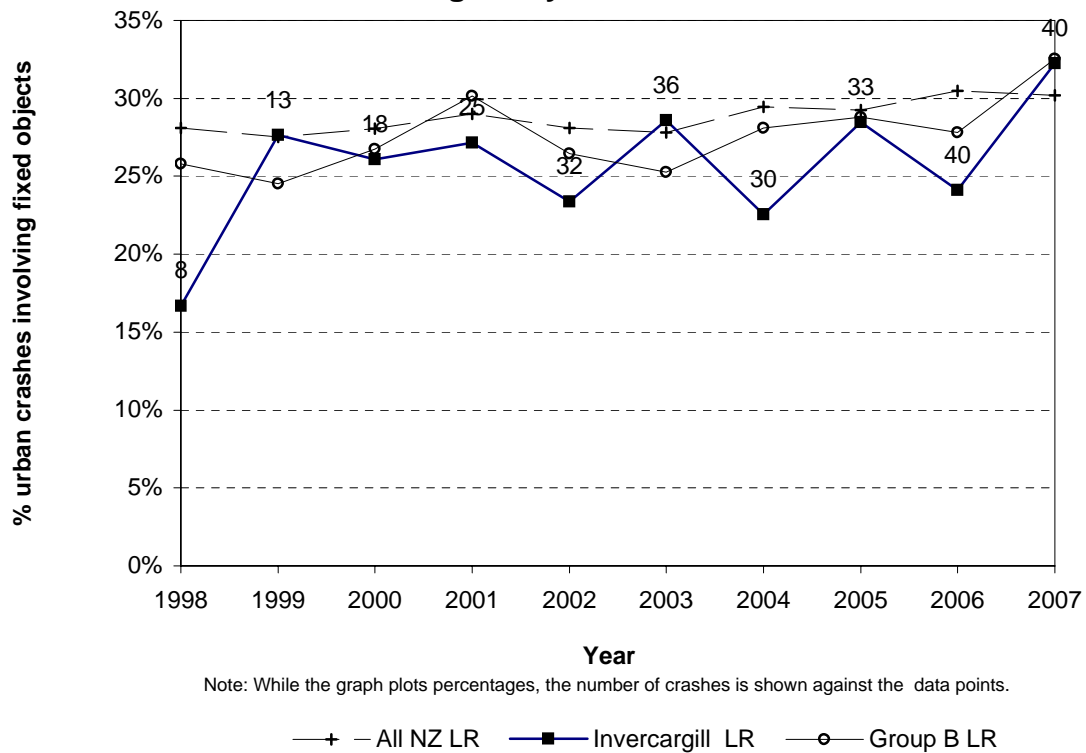
**Figure 8.21 Crashes on unsealed roads  
Invercargill City - rural local roads**



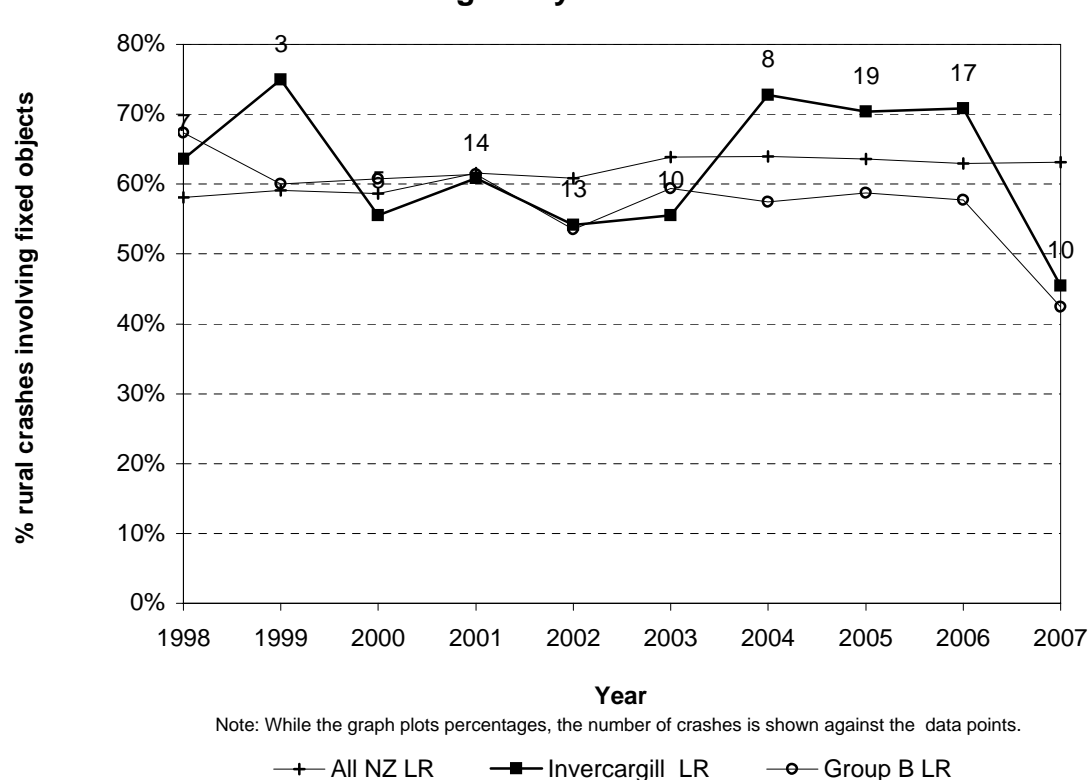
**Figure 8.22 Icy road crashes  
Invercargill City - rural local roads**



**Figure 8.23 Collisions with objects  
Invercargill City - urban local roads**

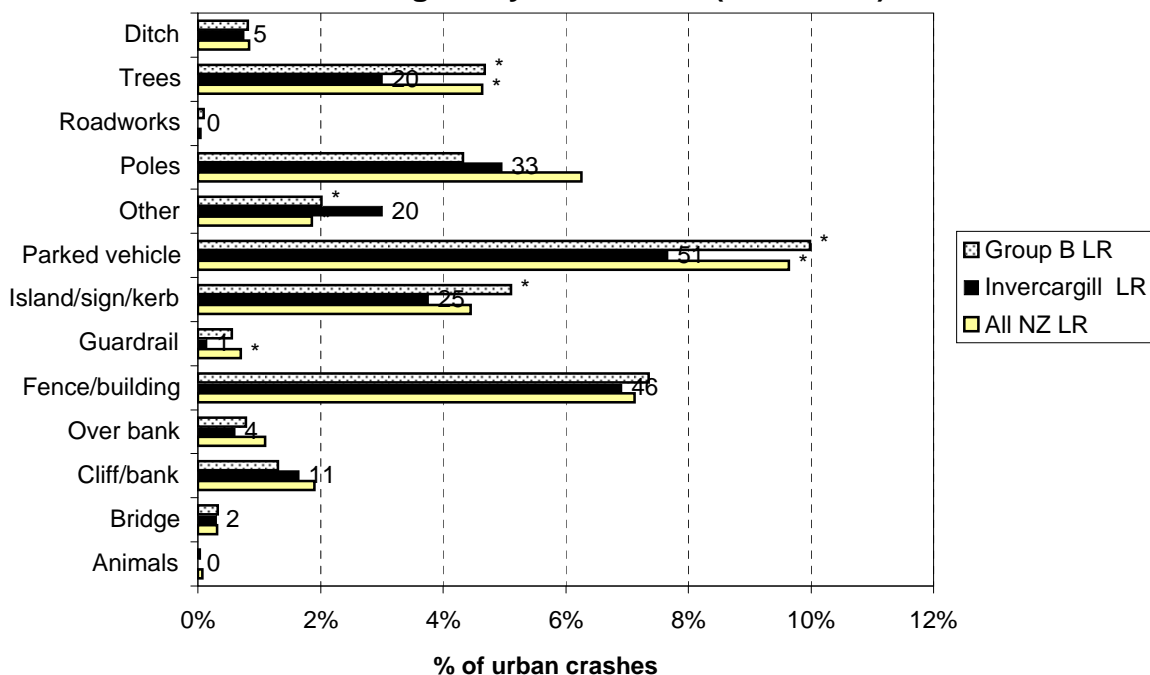


**Figure 8.24 Collisions with objects  
Invercargill City - rural local roads**





**Figure 8.25 Objects struck - urban  
Invercargill City local roads (2003-2007)**



**Figure 8.26 Objects struck - rural  
Invercargill City local roads (2003-2007)**

